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PATENTS FOR INVENTIONS.

ABRIDGMENTS

OF

Specifications

RELATING TO

P H O T O G R A P H Y.

PRINTED BY ORDER OF THE COMMISSIONERS OF PATENTS.



LONDON :

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1861.

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P R E F A C E.

THE Indexes to Patents are now so numerous and costly, as to render their purchase inconvenient to a large number of inventors and others, to whom they have become indispensable.

To obviate this difficulty, short abstracts or abridgments of the Specifications of Patents under each head of Invention have been prepared for publication separately, and so arranged as to form at once a Chronological, Subject-matter, Reference, and Alphabetical Index to the class to which they relate. As these publications do not supersede the necessity for consulting the Specifications, the prices at which the latter are sold have been added.

The Specifications included in this series of inventions relate :—

- 1st. To the processes of Photography.
- 2nd. To the chemical, optical, and mechanical apparatus used in the practice of the art, or its applications.
- 3rd. To the various applications of Photography.
- 4th. To the camera obscura, so far as its use for photographic purposes is concerned.
- 5th. To the stereoscope ; this instrument depends upon the results of photography for its efficient action ; it gives to photographs the nearest possible approach to reality ; therefore, all Specifications relating to stereoscopes are included in this series.

All the quotations from the printed Specifications (in-

cluded between quotation commas throughout the work) are given in the exact punctuation and orthography therein used; however, to draw attention to any passage more immediately connected with this series of abridgments, portions are sometimes italicised that appear in Roman type in the original.

Berzelius' ammonium theory has been adhered to throughout the text of the work, and the best recognised names for chemical and metallic bodies such as ammonium, platinum, have been adopted.

When two words are used as one adjective to qualify a noun, they are connected by a hyphen, thus:—"camel-hair pencil," "eye-piece frame," &c.

The definition of "Photography" for the purpose of these abridgments is, "the art of copying designs or images, however they may be produced, by the chemical action of light upon surfaces prepared to receive that action."

It is hoped that the publication of these abridgments will prevent the disappointment consequent on repatenting an old invention, and, by setting forth what has been already done in this department of applied knowledge, enable inventors to exert their talents only upon discoveries and applications that are new.

B. WOODCROFT.

July 1861.

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INTRODUCTION.

IN order to render the Abridgments of Specifications in which Photography is referred to as complete as possible, the following brief summary of the progress of knowledge in reference to this subject is prefixed. By the chronological arrangement of the matter, the treating of each discovery or invention in a separate paragraph, and the citation of the works consulted, it has been sought to make the heads of the subject easy of reference, and to show readily where more detailed information can be found.

Although the action of light on coloured bodies must have been of every-day occurrence, the philosophers of antiquity did not record the fact, and the chemical action of light upon matter would appear to have entirely escaped their observation. The first definite knowledge of this action appears to have been some observations of the alchemists, that "horn silver" (chloride of silver) was blackened by exposure to light. Although the middle ages thus furnished the discovery of one of the facts upon which the scientific principles of photography depend; the others—viz., the proper application of designs or images to sensitive surfaces and the permanent fixing of the pictures so obtained—are belonging to the present era.

B.C.

300. EUCLID, about 300 B.C., in his "Treatise on Optics" (26th, 27th, and 28th theorems) proves that he knew that the pictures of bodies seen by both eyes are formed by the union of two dissimilar pictures formed by each eye. (See Brewster on the *Stereoscope*, p. 6; also Euclid's *Optics*, Edit. of Pena, pp. 17, 18, Paris, 1577; or *Opera*, by Gregory, pp. 619, 620, Oxon. 1703.)

A.D.

170. GALEN, about A.D. 170, in the twelfth chapter of the tenth book of his work, "De Usu Partium Corporis Humani," described the phenomena attendant upon looking at

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- bodies with both eyes, and alternately with the right and left eye. (See Brewster on the *Stereoscope*, pp. 6, 7; also *De Usu Partium Corporis Humani*, edit. Lugduni, 1550, p. 593.)
1646. LICETAS and KIRCHER, in 1646, noticed the phosphorescent influences of solar rays. (See Hunt's *Manual of Photography*, p. 335.)
1722. PETIT, in 1722, noticed that solutions of nitrate of potash and muriate of ammonia crystallized more readily in the light than they did in darkness. (See Hunt's *Manual of Photography*, p. 4.)
1777. SCHEELLE, in 1777, observed the dissimilar powers of the rays of the spectrum in darkening nitrate of silver; he found the violet ray to have the most blackening effect. (See Hunt's *Manual of Photography*, p. 4.)
1786. SCHEELLE, in 1786, observed that nitric acid was decomposed by the chemical action of light. (See Hunt's *Manual of Photography*, p. 335.)
1791. SENEBIER, in 1791, discovered that yellow wax was bleached by the action of light. (See Hunt's *Manual of Photography*, p. 335.)
1795. FISCHER, in 1795, observed the action of light upon the ferrocyanates of iron. (See Hunt's *Manual of Photography*, p. 334.)
1801. J. W. RITTER, in 1801, pointed out "the separate existence of chemical rays in the spectrum which extend " beyond the most refrangible or violet rays." (See *Encyclopædia Britannica*, 8th edit., Dissertation on Optics, pp. 921, 922.)
1802. Mr. THOMAS WEDGWOOD and Sir HUMPHREY DAVY, in June 1802, published their method of copying paintings, &c., by means of the action of light upon nitrate of silver. Paintings on glass were copied by placing white paper or white leather, sensitized with this salt, behind the painting, and exposing the arrangement to solar light. This method was also employed to delineate profiles or shadows of figures, the woody fibres of leaves, the wings of insects and the images produced by the solar

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- microscope. Muriate of silver was found to be more sensitive than the nitrate, and both were more readily acted upon when moist than when dry. These pictures could not be fixed. (See Nicholson's *Journal of Natural Philosophy*, &c., 8vo. series, vol. III., p. 167; also *Encyclopædia Britannica*, 8th edit., art. Photography, p. 544.)
1802. Sir HUMPHREY DAVY, in 1802, noticed the effect of light upon the puce-coloured oxide of lead. (See Hunt's *Manual of Photography*, p. 334.)
1802. Mr. ROBERT HARUP, in 1802, showed that several salts of mercury were reduced by light. (See Hunt's *Manual of Photography*, p. 5; also Nicholson's *Journal* for 1802.)
1803. WOLLASTON, in 1803, discovered the action of light upon gum guaiacum. (See Hunt's *Manual of Photography*, p. 335.)
1803. Dr. YOUNG, about 1803, proved the interference of the obscure chemical rays. (See *Encyclopædia Britannica*, 8th edit., Dissertation on Optics, p. 922.)
1810. SEEBECK, in 1810, observed the production of colour on chloride of silver by the various rays of the spectrum; the violet rays rendered it brown, the blue produced a shade of blue, the yellow preserved it white, and the red gave the salt a red colour. (See Hunt's *Manual of Photography*, p. 8.)
1812. BÉRAUD, in 1812, showed that the chemical rays are polarized by reflection. (See *Encyclopædia Britannica*, 8th edit., Dissertation on Optics, p. 922.)
1814. M. NICEPHORUS NIÉPCE, in 1814, "attempted to fix the pictures produced in the camera obscura, and to copy engravings by means of light transmitted through them upon substances made sensible to its action;" he used a tablet of copper coated with silver, and called his process "*Heliography*." (See *Encyclopædia Britannica*, 8th edit., art. Photography, p. 545.)
1824. M. DAGUERRE, in 1824, began experiments with the view of fixing the pictures in the camera. (See *Encyclopædia Britannica*, 8th edit., art. Photography, p. 545.)

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1827. **M. NICEPHORUS NIÉPCE**, in December 1827, submitted some pictures taken upon silvered copper plates smeared with the bitumen of Judæa to the Royal Society. The resin is rendered insoluble in certain essential oils by the action of light, on subsequent treatment with the oleaginous solvent, the shadows dissolve away, and the lights are represented by the unaltered resin remaining on the plate. In order to produce a better effect, M. Niépce darkened the silver surface with a film of iodine. (See *Encyclopædia Britannica*, 8th edit., art. Photography, p. 545; also Hardwich's *Manual of Photographic Chemistry*, pp. 7, 8.)
1833. **Mr. WILLIAM HENRY FOX TALBOT**'s researches in photography date from October 1833, and were suggested by an unsatisfactory attempt to use the camera lucida for the purpose of sketching. (See Supplement to the *Penny Cyclopædia*, art. Photography.)
1834. **Mr. WILLIAM HENRY FOX TALBOT**, in 1834, took pictures in the camera by the action of light upon paper washed with nitrate of silver, and succeeded in fixing them; he called this art "*Calotype*." (See *Encyclopædia Britannica*, 8th edit., art. Photography, p. 545.)
1835. **Mrs. SOMERVILLE**, in 1835, made some experiments on the permeability of different bodies to the chemical rays. Copper-green glass intercepts, and the emerald transmits them; red glass stops most of them, whilst the garnet transmits them. (See *Encyclopædia Britannica*, 8th edit., Dissertation on Optics, p. 922.)
1838. **Mr. WHEATSTONE**, on 21st June 1838, read a paper to the Royal Society, in which he described an instrument for uniting two dissimilar pictures of solid bodies, called a "*Stereoscope*." This instrument is known by the name of "*The Reflecting Stereoscope*," as the images are made to coincide by means of mirrors. The observer looks into two plane vertical mirrors (one being opposite to each eye) inclined to each other at an angle of 90°; the drawings, taken according to the laws of perspective, are fixed to two upright planes equally inclined to the mirrors.

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(See Brewster on the *Stereoscope*, pp. 18 and 58-61; also *Phil. Trans.* 1838, pp. 371-394.)

- M. DAGUERRE's invention (the "Daguerreotype") was communicated to the Academy of Sciences on the 7th
1839. January 1839. (See *Penny Cyclopædia*, art. Photogenic Drawings.)
- Mr. WILLIAM HENRY FOX TALBOT, on the 30th January
1839. 1839, communicated his discovery to the Royal Society. The paper was sensitized by means of nitrate of silver, and the image fixed by common salt. (See *Encyclopædia Britannica*, 8th edit., art. Photography, p. 545.)
1839. The Rev. J. B. READE, in April 1839, delineated, by the agency of light, objects of natural history from their images taken by the solar microscope. Nitrate of silver solution sensitized writing paper which was washed with an infusion of nut-galls just prior to use, and was employed wet. Hyposulphite of soda fixed the picture. (See *Encyclopædia Britannica*, 8th edit., art. Photography, p. 545.)
1839. Mr. MUNGO PONTON, on the 29th May 1839, announced to the Royal Scottish Society of Arts that bichromate of potash might be used in solution to sensitize paper. The dark orange tint of the parts exposed to light remains on the immersion of the picture in water, only the yellow portions being dissolved out. (See *Encyclopædia Britannica*, 8th edit., art. Photography, p. 545.)
- M. DAGUERRE in conjunction with M. ISIDORE NIÉPCE,
1839. on the 15th June 1839, received a pension from the French Government for their invention of the "Daguerreotype." (See *Encyclopædia Britannica*, 8th edit., art. Photography, p. 545; also Hunt's *Manual of Photography*, p. 21.)
1839. Sir JOHN HERSCHEL, in 1839, used glass plates in conjunction with precipitates of silver to obtain photographs upon. (See Hunt's *Manual of Photography*, pp. 276-279 and 333.)
1839. Mr. ELLIOT, in 1839, constructed an "ocular" stereoscope, consisting of a wooden box, without lenses or mirrors, in which two dissimilar pictures as seen by each eye,

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- were placed. The images were united by the eyes alone. (See Brewster on the *Stereoscope*, pp. 18-22 and 56-58.)
1839. Mr. T. B. JORDAN, in 1839, used photography for automatic registration. The barometer, thermometer, and magnetometer were thus made self-registering. Mr. Jordan also devised a "Heliograph" for numerically registering the intensity of an incident beam. (See Hunt's *Manual of Photography*, pp. 285-289.)
1839. Dr. FYFE, in 1839, used the following sensitizing process :—
The paper is soaked in phosphate of soda solution, dried, treated with nitrate of silver solution, and "again put through the salt, by which any excess of silver is converted to phosphate." (See Hunt's *Manual of Photography*, pp. 174 and 332.)
1840. Sir JOHN HERSCHEL, in 1840, made his important researches on the chemical properties of the solar spectrum. He operated upon sensitized paper; the solutions used were, nitrate of silver, nitrate of silver mixed with chloride of sodium, and nitrate of silver mixed with hydrobromate of potash. In the first instance the chemical spectrum was 1·57 times the length of the luminous spectrum, in the second instance 1·81 times, and in the third instance 2·16 times. (See Sir David Brewster's *Optics* in Lardner's Cabinet Cyclopædia, pp. 104, 105; also *Phil. Trans.* for 1840, p. 26.)
1840. Sir JOHN HERSCHEL, in 1840, procured upon photographic paper a coloured image of the solar spectrum. (See *Encyclopædia Britannica*, 8th edit., art. Photography, p. 552.)
1840. Sir J. F. W. HERSCHEL, on 20th February 1840, read a paper to the Royal Society on an "Actinograph" or self-registering photometer. (See *Phil. Trans.*, vol. 130, 1840.)
1840. Sir JOHN HERSCHEL, about 1840, discovered "that certain
" of the persalts of iron when exposed to sunlight in
" contact with organic matter, were reduced to the state
" of protosalts." (See Hardwich's *Manual of Photographic Chemistry*, p. 182.)
1840. Dr. DRAPER, in 1840, published his process in England, for taking Daguerreotype portraits. (See Hunt's *Manual of Photography*, pp. 281-284.)

A.D.

1840. Mr. JOHN GODDARD, in 1840, proved that the sensibility of the Daguerreotype plate was greatly promoted by exposing it to the vapours of iodine and bromine in succession. (See Hardwich's *Manual of Photographic Chemistry*, p. 182.)
1840. M. E. BECQUEREL, in 1840, used a combination of bichromate of potash and iodide of starch to sensitize paper with. After exposure to light, the dry photograph is steeped in an alcoholic solution of iodine, then washed and dried. (See Hunt's *Manual of Photography*, pp. 142, 143, and 335.)
1840. Mr. HUNT, in 1840, introduced the use of protosulphate of iron as a photographic agent for developing the image. (See Hunt's *Manual of Photography*, p. 109.)
1840. BAYARD, in 1840, discovered the use of bromide of silver in photographic operations. (See Hunt's *Manual of Photography*, p. 332.)
1841. M. CLAUDET, in 1841, employed chloride of iodine as a means of accelerating the action of sensitive surfaces. M. Claudet also invented a "photographometer," a "dynactonometer," and a "focimeter." (See Hunt's *Manual of Photography*, pp. 92, 288, and 291.)
1842. Messrs. HUNT and TOWSON, in 1842, made a sensitizing solution containing fulminate of silver; this agent was remarkable for its high degree of sensibility to light. (See Hunt's *Manual of Photography*, pp. 174, 175, and 332.)
1842. Sir J. F. W. HERSCHEL, on the 16th June 1842, read a paper to the Royal Society on the action of the rays of the solar spectrum on vegetable colours and on some new photographic processes; among the processes described were the "Chrysotype" and the "Cyanotype." (See *Phil. Trans.* vol. 132, 1842.)
1843. M. DAGUERRE, in 1843, made certain improvements in polishing and preparing Daguerreotype plates. The chief feature was heating pure water over the plate. (See Hunt's *Manual of Photography*, pp. 177-179; also *Comptes Rendus* of 13th March 1843.)

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1843. Mr. HUNT, in 1843, used a mixture of bichromate of potash and sulphate of copper as a sensitizing solution. The picture is developed by means of nitrate of silver, and fixed by washing in pure water. This process is called "Chromatype." (See Hunt's *Manual of Photography*, pp. 143-145, and 334.)
1844. M. DAGUERRE, in 1844, published an extremely complex "instantaneous" Daguerreotype process, in which the sensitizing agent was a mixed iodide of gold and platinum. (See Hunt's *Manual of Photography*, pp. 181-184; also *Comptes Rendus* for April 1844.)
1844. Mr. CUNDELL, in 1844, invented an important improvement upon Mr. Fox Talbot's "Calotype" process. The chief feature consists in using common salt mixed with the iodide of potassium to "iodize" the paper; the details of the process are also different from Mr. Fox Talbot's method. A *negative* picture is produced. (See Hunt's *Manual of Photography*, pp. 56-62; also the *Philosophical Magazine* for May 1844.)
1844. Mr. HUNT, in 1844, published his process called "Energia-type," or "Ferrottype." The paper is sensitized by means of succinic acid, common salt, gum arabic, and nitrate of silver. The picture is developed by a mixture of protosulphate of iron and gum arabic, and fixed by hyposulphite of soda. (See Hunt's *Manual of Photography*, pp. 145-147.)
1844. Mr. HUNT, in 1844, published a process which he called the "Fluorotype." The sensitizing solution contains bromide of potassium and fluoride of sodium, a solution of nitrate of silver is then applied. In the developing process protosulphate of iron and weak muriatic acid are used; the image is fixed by means of hyposulphite of soda. (See Hunt's *Researches on Light*; also Hunt's *Manual of Photography*, pp. 83 and 257.)
1844. Dr. WOOD, in 1844, invented a process called "Catalyso-type," from its dependence on catalysis for its action. The paper is sensitized by means of weak hydrochloric acid, a mixture of syrup of iodide of iron and tincture of iodine, and a solution of nitrate of silver. When left in

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the dark, after exposure in the camera, a negative picture becomes gradually developed. The picture may then be fixed by washing it with a solution containing bromide and iodide of potassium. (See Hunt's *Manual of Photography*, pp. 147-150, and 334.)

M. FIZEAU's method of etching photographic impressions by means of an acid menstruum was presented to the British Association in 1845. (See Supplement to the *Penny Cyclopædia*, art. Photography.)

1846. Mr. R. J. BINGHAM, in 1846, published his improvements on the Daguerreotype process. These consisted in the substitution of certain compounds of bromine, chlorine, and iodine with lime for the bromine or other accelerating solution. A dry accelerating mixture unaffected by heat is thus secured. (See *Philosophical Magazine* for October 1846; also Hunt's *Manual of Photography*, pp. 92-94.)
1848. M. NIÉPCE DE ST. VICTOR, in 1848, substituted for the paper used by Mr. Fox Talbot, a film of albumen spread upon glass. (See *Encyclopædia Britannica*, 8th edit., art. Photography, p. 546.)
1849. Sir DAVID BREWSTER, in 1849, exhibited his lenticular stereoscope to the British Association. (See Brewster on the *Stereoscope*, p. 29.)
1851. Mr. ARCHER, in the autumn of 1851, published his collodion process, he at the same time proposed the substitution of pyro-gallic acid for the gallic acid previously employed in developing the image. M. LE GREY originally suggested the use of collodion for photographic purposes. (See Hardwich's *Manual of Photographic Chemistry*, p. 10.)
1851. Messrs LANGENHEIM, in 1851, introduced "Hyalotypes" into England. These were positive pictures, copied on glass from negatives; they were adapted to the slides of magic lanterns. (See Hunt's *Manual of Photography*, p. 84.)
1852. M. ADOLPHE MARTIN, in 1852, used a collodion process in which the sensitizing operation is performed by means of nitrate of silver, iodide of ammonium and nitric acid.

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- Protosulphate of iron develops the image, which is changed from negative to positive by a bath of double cyanide of silver and potash. (See *Hunt's Manual of Photography*, pp. 124, 125.)
1852. Mr. STEWART, in 1852, employed a negative paper process (wet or dry) in which the following solutions were used :— Iodide of potassium, aceto-nitrate of silver, gallic acid (for developing), and hyposulphite of soda. To iodize the paper the air-pump was used. (See *Hunt's Manual of Photography*, pp. 68–71 ; also the *Athenæum* for December 1852.)
- Mr. HARTNUP, Dr. EDWARDS, and Mr. J. A. FORREST, in 1854, attempted to obtain photographs of the moon. (See *Liverpool Photographic Journal* for 1854, p. 14.)
1854. Mr. SHADBOLT, in March 1854, executed and exhibited microscopic photographs from the 20th to the 40th of an inch diameter. These pictures are made with a structureless collodion. (See *Encyclopædia Britannica*, 8th edit., art. Photography, p. 552.)
1856. M. M. MELINE and MONTREUIL, in 1856, published a dry collodion process, the principal feature of which was the washing the free nitrate of silver away from the sensitized collodion before exciting the plate, and allowing the plate to dry. (See *Liverpool and Manchester Photographic Journal* for 1857, pp. 7, 8.)
1857. M. TAUPENOT, about 1857, used albumen as a varnish to preserve sensitive collodion plates. (See *Hunt's Manual of Photography*, pp. 119 and 336.)
1857. M. JULIEN BLOT, in 1857, improved upon M. Taupenot's process, and prevented the blistering of the albuminized collodion film by a process in which dextrine was used. (See *Hunt's Manual of Photography*, p. 336 ; also *Cosmos* of 17th April 1857.)
1857. Messrs. SPILLER and CROOKES, in 1857, used nitrate of magnesia and nitrate of zinc to preserve sensitive collodion plates by their deliquescent properties ; the plates thus being kept slightly moist. (See *Phil. Mag.*, May 1857 ; *Photographic Journal*, vol. I., p. 223, and vol. II., p. 6 ;

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also *Encyclopædia Britannica*, 8th edit., art. Photography, p. 548.)

1858. Mr. LAWRELLYN, in August 1858, published his oxymel process, in which bromide of potassium, alcohol, oxymel, citric acid, and nitrate of silver are used. (See *Encyclopædia Britannica*, 8th edit., art. Photography, p. 549.)

1858. Mr. R. M. GRIER, in 1858, published the following process:—"A plate coated with asphalt varnish, known in Prussia by the name of *eisenlack*, diluted with rectified benzole or benzine (first product obtained by distillation of coal tar at a low heat), and when barely dry, and still slightly sticky, was placed in contact in the pressure frame with a negative on albumen, and exposed to the direct rays of the sun for half an hour. On removal from the pressure-frame, the plate was breathed on over its whole surface, until the image became distinctly visible, the parts changed by the action of light absorbing moisture, and those covered by the blacks of the negative remaining unchanged, and repelling it. In this state, the image being distinctly visible, it was quickly covered by the bronze powder known as *aurum musivum*, which at once changed the almost invisible image to a direct positive on black and gold, the gold adhering to the parts that had been protected from the light, and not adhering to those where the actinic rays had effected such a change in the molecular structure of the film as rendered them capable of absorbing moisture, thus producing a complete picture detailed in all its parts." (See *Journal of the Photographic Society*, 22nd Nov. 1858, p. 87; also *Encyclopædia Britannica*, 8th edit., art. Photography, pp. 546, 547.)

1859. M. VAN MONKHOVEN, in 1859, presented a memoir to the Académie des Sciences, on a new method of photography by means of the solvents of cellulose; he employed the ammonio-cupric solution of Dr. SCHWEITZER. (See the *Photographic News*, edited by W. Crookes, for April 15th 1859, pp. 61, 62.)

1859. Messrs. BUNSEN and ROSCOE, on the 26th May 1859, read a paper before the Royal Society, respecting their

“photo-chemical researches.” The standard flame for their purposes was that of carbonic oxide, and by its means they established a unit of chemical light. A thin film of cloud was found to increase the chemical effect, and thick clouds to extinguish the chemical light of diffuse daylight. In the higher latitudes it was found that the chemical action of diffuse daylight greatly exceeded that of direct sunlight. The chemical brightness of the sun, in the latitude of Heidelberg, was ascertained to be 36·6 times as great as that of burning magnesium wire when the sun’s zenith distance is $67^{\circ} 22'$. By means of a quartz prism and other appliances the chemical action of the various parts of the solar spectrum was measured. (See *Phil. Trans.* for 1859, pp. 879—926.)

PHOTOGRAPHY.

A.D. 1839, August 14.—N° 8194.

BERRY, MILES (*a communication. Invented by Messrs. Louis Jacques Maude Daguerre and Joseph Isidore Niepce, junior.*).—This invention is commonly known under the name of “Daguerreo-
“ type.”

“ The reproduction of the images received at the focus of the
“ camera obscura, is effected on plates or surfaces of silver, which
“ may be plated on copper.” The silver surface of the plate is
first polished and cleaned ; secondly, a coating sensitive to light
is applied to the silver surface ; thirdly, the prepared surface is
submitted to the action of light in the camera obscura, “ so that
“ it may receive the images ;” fourthly, the photographic picture,
which is invisible when the plate is taken from the camera, is
brought out ; fifthly and lastly, the sensitive layer is removed from
the plate, thus fixing the picture.

1st process.—Polishing the plate is effected by means of pounce
pumice powder, or calcined Venetian tripoli, which is rubbed on
the plate by means of finely-carded cotton dipped in olive oil.
The plate is then cleaned by dusting the powder over the surface
and rubbing it with dry cotton. It is further prepared by rubbing
with cotton moistened with dilute nitric acid, cleansed again by
means of powder and cotton, and submitted to considerable heat
until “ the surface of the silver has obtained a whitish tint or
“ coating.” The plate is next cooled rapidly by placing it in
contact with a cold substance, cleaned as before, and treated with
dilute nitric acid as before, three separate times, the last time
being just before use ; it is finally entirely cleaned from pounce
dust by cotton.

2nd process.—The layer sensitive to light is formed upon the
plate, after it has passed through the first or cleansing process, by
coating it with iodine by spontaneous evaporation in the dark.

The plate is first fixed upon a thin board by means of suitable metallic bands and nails; it is then exposed to the vapour of iodine (being for that purpose enclosed in a suitable box, in the bottom of which is a dish containing iodine,) until it has attained a golden yellow tint. The board and plate must then be introduced into a frame fitting the camera obscura, and having shutters or doors to exclude light until the plate is exposed in the camera.

3rd process.—The prepared surface should be submitted to the action of light in the camera immediately after being sensitized. This is done by adjusting “the focus of the camera obscura so “that the objects be represented perfectly clear and distinct;” a frame containing ground glass is moved forward or backward for this purpose. The glass is then removed, the frame containing the board and plate is substituted for it, and the shutters opened, so that the plate can receive the impression of the image of the objects chosen; the plate remains in this position until the requisite number of minutes have elapsed. The doors are then closed, the frame is removed from the camera, and the plate immediately subjected to the next operation.

4th process.—To bring out the picture the plate is removed from the frame and exposed in the dark to the vapour of mercury. A box is provided with a cup at the bottom, containing mercury the board and plate are introduced into the upper part of the box, and shut up. The mercury is then heated, and the plate left in until, by inspection through a glass by means of a candle, the development of the picture is found to be complete. The plate may now be deposited in a suitable dark box, thus being excluded from the light until it is convenient to fix the picture.

5th and last process.—To remove from the plate the coating of iodine, and thus to fix the picture, a solution of “sea salt” may be used, but a weak solution of hyposulphite of soda is preferred. The plate is first dipped into distilled water, then moved about in the saline solution until the yellow colour of the iodine is entirely removed, again plunged into water, and finally subjected to the action of a continuous stream of hot water falling on an inclined plane carrying the plate, thus cleansing it perfectly; it is then ready for mounting by being placed in a pasteboard case, and covered with glass, thus preserving the silver surface from being touched and from tarnishing.

The Specification describes these processes at great length, and Drawings of the apparatus are given in detail.

[Printed, 11d. See Repertory of Arts, vol. 18 (*new series*), p. 176; vol. 6, (*enlarged series*), p. 256; vol. 8, (*enlarged series*), p. 47; and vol. 14, (*enlarged series*), p. 293. London Journal (*Newton's*), vol. 16, (*conjoined series*), p. 1; vol. 21, (*conjoined series*), p. 57; vol. 28 (*conjoined series*), p. 368; vol. 31 (*conjoined series*), p. 64; and vol. 34 (*conjoined series*), p. 438. Mechanics' Magazine, vol. 31, p. 464; vol. 32, p. 77; and vol. 47, p. 45. Patent Journal, vol. 3, p. 157; also vol. 7, p. 123. Inventors' Advocate, vol. 2, p. 163. Common Bench Reports, vol. 3, p. 97; also vol. 8, p. 165. Carrington and Kirwan's Reports, vol. 2, p. 667.]

A.D. 1840, June 13.—N^o 8546.

BEARD, RICHARD (*a communication*).—This invention consists of:—

1st. "A mode of taking likenesses and representations of "nature, and of drawings by reflecting images on to suitably "prepared surfaces," by means of concave reflectors. Instead of the camera obscura a "rectangular" box is used, inside of which and at the end thereof is fixed a concave reflector; the prepared surface is placed opposite the reflector, and is capable of being moved towards or away from it for the adjustment of the focus. The box has its end opposite to the mirror open; this end is placed opposite to the object to be photographed, so that a clear image is reflected on to the prepared surface.

The following points are mentioned as auxiliaries to the use of this apparatus in the case of taking portraits, &c.:—A head-rest attached to the chair of the person sitting; the glazing of the inclined glass roof of the room with blue glass; the use of a large concave reflector, to reflect the light of the sun on to the person sitting, the rectangular box above mentioned being then placed behind the large reflector, which has a hole through it towards the outer edge, also "a surface of tissue paper varnished with "boiled oil" stretched across its front; a screen of ground glass placed behind the person sitting; a frame containing a white surface placed behind the screen, so as to receive the shadow of the person. By the combination of the screen and frame, varying effects of light and shade are produced in the picture. In the case of plaster busts or other white objects, it is sometimes advantageous to use a brown, blue, or black back surface.

2nd. "A mode of preparing silver surfaces by pressing them "face to face between hardened rollers, when they are to receive

"images." Two plates of copper coated with silver are cleaned with cotton and dilute sulphuric acid; their silver surfaces are then placed in contact, and they are passed between a pair of smooth hardened rollers; they are then annealed by heat, permitted to cool, and the whole process repeated until the silver surfaces are highly polished and equal in appearance all over. Tripoli and dilute nitric acid are then lightly rubbed over the silver surface with cotton, and then rubbed off with dry cotton. Lastly, the silver surface is rubbed over with velvet impregnated with charcoal, and is then ready to undergo the iodine process.

3rd. A mode of treating silver surfaces used to receive images, by submitting them to the action of iodine and bromine or bromic acid combined, and, by preference, either nitric acid or sulphuric acid and water is also combined with the iodine and bromine. The silver plate is placed on a glass slide which works in a box, at the bottom of which is a vessel containing the mixture of iodine and acid, or iodine, bromine, and acid, or iodine and bromine; the silver surface is placed downwards, and in a few seconds is ready to receive the image, or to be put into a dark case ready for use.

[Printed, 7d. See Repertory of Arts, vol. 15 (*new series*), p. 137, and vol. 1 (*enlarged series*), p. 185; London Journal (*Newton's*), vol. 18 (*conjoined series*), p. 112; and Inventors' Advocate, vol. 4, p. 34.]

A.D. 1841, February 8.—N^o 8842.

TALBOT, WILLIAM HENRY FOX.—The first part of this invention is generally known as "the calotype process."

The first part of the invention is arranged under the following heads:—

The preparation of "iodized paper."—The best writing paper is washed successively with solutions of nitrate of silver and of iodide of potassium, being dried after each washing; it is kept in a dark place until wanted for use, when the next process is performed.

The preparation of "calotype paper."—A solution of the "gallo-nitrate of silver" is formed, by first adding strong acetic acid to a solution of nitrate of silver, and to this compound solution adding a saturated solution of gallic acid or the tincture of galls diluted with water. The "iodized paper" is washed over with the "gallo-nitrate of silver" thus prepared, dipped in water and dried; it is then ready for use in the camera obscura.

To entirely bring out the invisible or faint image.—When the

paper is removed from the camera the image is either invisible or very faint; this is brought out by washing the paper with the "gallo-nitrate of silver" solution, and holding it before a gentle fire. When the image is dark enough the picture must be fixed by the next process.

The fixing process.—The picture is dipped into water, partly dried, washed with a solution of bromide of potassium or some other soluble bromide, washed with water, and, finally, dried. The picture thus obtained is a *negative* photograph; a *positive* one may be obtained from it on another sheet of sensitive paper by means of the copying frame. This method of obtaining pictures is preferred for portraits.

The second part of the invention consists in a mode of obtaining positive photographs by a single process. A sheet of sensitive calotype paper is slightly browned by exposure to daylight, dipped into iodide of potassium solution, then into water, lightly dried, impressed with the image, and washed with gallo-nitrate of silver, warmed and fixed as before directed.

The third part of the invention "is a method of obtaining photogenic images upon copper." A plate of polished copper is sensitized by means of "iodine or bromine, or of these two substances united, or of either of them, in union with chlorine;" a photogenic image is then formed upon it, and it is exposed preferably to the vapour of sulphuretted hydrogen; other vapours or liquid solutions which colour the surface of the copper may be employed. This image requires no further fixing.

The fourth part of the invention consists in coating any suitable metal with a thin layer of silver, sensitizing the silver face, forming a photogenic image upon it, then producing a coloured film upon it by acting on a solution of lead by means of galvanism.

The fifth part of the invention is a means of obtaining very thin photographic silver plates. A thin layer of copper is electro-deposited upon a polished metal plate; the layer of copper is removed from the metal plate by means of a sheet of paper or card glued to its back, and the copper "is then silvered by dipping it into any suitable solution of silver."

The sixth and last part of the invention consists of transferring photogenic images from paper to metal. The metallic surface is sensitized, and the paper photograph pressed into firm contact with it by means of a sheet of glass and screws; the whole is then ex-

posed to sunshine, and the image on the metal fixed. The positive picture, mentioned in the first part of the invention, is obtained from the negative (preferably on common photographic paper), in a similar way to that just described.

A Disclaimer was enrolled March 8, 1854, by William Henry Fox Talbot, in which the third, fourth, fifth, and sixth portions of the invention are disclaimed.

[Printed, 5d. See Repertory of Arts, vol. 18 (*new series*), p. 185; London Journal (*Newton's*), vol. 19 (*conjoined series*), p. 189, and vol. 44 (*conjoined series*), p. 457; Mechanics' Magazine, vol. 35, p. 188; Inventors' Advocate, vol. 5, p. 99; and Engineers' and Architects' Journal, vol. 4, p. 429.]

A.D. 1841, December 18.—N° 9193.

CLAUDET, ANTOINE JEAN FRANÇOIS.—This invention consists of the following improvements in the Daguerreotype process :—

1st. A camera obscura in which various sized lenses can be used, and fitted for either large or small sensitive plates. Each optical arrangement is made to slide in the open front of the camera; it is therefore easy to substitute one for another; the plate frame is fitted with a rack and pinion to adjust the focus, and has a telescope tube slide for vertical adjustment of the plate.

2nd. The vapours of mercury are applied within the camera, at the same moment that the light is producing its effect upon the plate; this enables the development of the picture to be carefully watched, by means of a red or orange coloured light, while the light is acting upon the sensitive medium. There is adapted to the camera a cup containing mercury, which, by means of a spirit lamp applied under it, spreads the vapours of the mercury throughout the camera.

3rd. In taking Daguerreotype portraits a background of painted scenery is applied behind the sitter.

4th. The following artificial lights are employed to take portraits at night, &c. :—1st. "The combustion of coal promoted by a jet of oxygen gas." 2nd. "The flame of combustible gases and carburetted liquids burning together with oxygen." 3rd. "A solid refractory body suspended in a jet of inflammable gas, which is burnt together with oxygen or in a jet of oxygen gas charged with the vapour of sulphuric ether." A reflecting concave mirror must be adapted behind the light. It is especially necessary to place the light in the optical axis of the mirror.

5th. All the operations upon the Daguerreotype plates which were formerly carried on in the dark, are, by this improvement, now performed in a room lighted through media of such colours as do not affect a sensitive plate; red is preferred.

[Printed, 4d. See London Journal (*Newton's*), vol. 20 (*conjoined series*), p. 430; *Mechanics' Magazine*, vol. 37, p. 128; and *Engineers' and Architects' Journal*, vol. 5, p. 358.]

A.D. 1842, March 10.—N° 9292.

BEARD, RICHARD (*a communication*).—This invention relates to “coloring daguerreotype pictures.”

1st method.—A tracing paper screen, resembling a stencil plate, having the parts cut out that are to receive the colour, is made by means of a subsidiary tracing upon glass or mica. By means of a number of these (one to each colour) used in succession, various colours in impalpable powder are deposited on the different parts of the picture, thus the whole of the picture is coloured.

The dry colours are ground to an impalpable powder in a solution of gum arabic or other adhesive material; they are then dried and sifted; in using them they are allowed to settle from a suitable box on to the screened picture, the screen is withdrawn from the picture, the colour removed from the shadows by blowing with bellows, and the remainder fixed on to the plate by breathing.

2nd method.—The surface of the glass which comes next the picture is coloured by using water and gum. A correct tracing is taken on the outer surface of the glass, and the colours are laid on to the under surface in a wet state by a brush.

3rd method.—The dry colours are stippled with a camel-hair pencil on to the different parts of the picture, using the colours required for each part. The colours are successively set by breathing over them.

[Printed, 3d. See *Repertory of Arts*, vol. 1 (*enlarged series*), p. 222; London Journal (*Newton's*), vol. 21 (*conjoined series*), p. 358; *Mechanics' Magazine*, vol. 37, p. 604, and vol. 43, pp. 85 and 94; and *Record of Patent Inventions*, vol. 1, p. 126.]

A.D. 1842, July 7.—N° 9406.

HODGSON, RICHARD.—1st. “Improvements in that class of “optical instruments where images are obtained on surfaces by “reflecting mirrors.” One improvement “consists in causing

"the images so reflected to pass through a lens or lenses interposed between the mirror and the receiving surface;" the introduction of a "correcting lens or lenses" (either meniscus or "compound achromatic") is said to correct the aberrations, increase the light, and to enable the mirror to be nearer the front of the camera. Another improvement "consists of passing the image from a mirror through a tube or trunk interposed between the mirror and the receiving surface;" the tube is much preferred to "the diaphragms now in use." Both or either of these improvements are applicable to photographic purposes.

2nd. Improvements in refracting cameras by applying a lens in combination with a prism of curved surfaces; a "correcting lens" is added to increase "the concentration of the rays." In the instance described a double convex lens of crown glass is combined with a prism of flint glass; the correcting lens used consists of a "concave convex" flint glass with its convex side towards the object, combined with a double convex crown glass whose lesser radius is towards the image; the prism combination (or "object glass") is connected with the correcting lens by means of a sliding tube. This combination gives an erect image, and is adjustable to objects at different distances; it is applicable to photography, particularly to portraiture.

[Printed, 8d. See *Mechanics' Magazine*, vol. 38, p. 300; and *Record of Patent Inventions*, vol. 1, p. 455.]

A.D. 1843, March 18.—N° 9672.

WALCOTT, ALEXANDER SIMON, and JOHNSON, JOHN.—1st. An improvement in Daguerreotype pictures. The light is allowed to act a longer time than usual on the plate. The plate is then removed from further luminous action, and is exposed to the vapour of iodine or to any vapour that lessens the deposit of mercury when the plate is afterwards exposed to it. By this treatment the gradation of light and shade is more true to nature than by the usual process, and the picture is not so much injured by an error in the time of its exposure to light as it otherwise would be.

2nd. "A camera, in which photographic pictures on polished plates may be copied by the scattered light from the surface of the plate." The camera has a slanting aperture at the top to admit light to the picture to be copied, whose polished surface reflects

the light thus received. The reflected rays pass through an adjustable tube containing two sets of lenses on to the surface on which the copy is to be made; by adjusting the relative distances of the tube and the reflecting and receiving surfaces, various sizes of copies may be produced. By inclining the reflecting and receiving surfaces to each other, distorted pictures may be copied in true perspective.

3rd. Apparatus for exhibiting photographic pictures on a screen in a dark room. A lime light illuminates a photographic picture made on the surface of a concave metallic mirror; the light from all parts of this picture passes through "a set of achromatic glasses," and the image is received on to a suitably placed screen. To enable the dark parts of the picture on the mirror to "become the least polished and the lightest the most so, with the intermediate gradations," some sulphuric acid is placed in the mirror and heated until the desired change takes place; the mirror is then washed, cleaned, and dried.

4th. Copying photographic pictures on metallic plates by means of the light reflected from their polished surfaces. The light is converged, by means of a lens or lenses, on to the surface of the plate (previously prepared by means of sulphuric acid as in the 3rd improvement), passed through a tube containing a double set of lenses and received on the sensitive surface, which is placed parallel to the original surface in order that it may receive a true image; a small likeness may thus be copied on to paper so as to be the size of life. The apparatus described in the 3rd improvement may be used by placing the prepared surface to receive the copy in the place of the screen.

[Printed, 8d. See Repertory of Arts, vol. 2, (*enlarged series*), p. 275; and London Journal (*Newton's*), vol. 25 (*conjoined series*), p. 330.]

A.D. 1843, June 1.—N^o 9753.

TALBOT, WILLIAM HENRY FOX.—This invention relates to the following improvements:—

1st. "To give increased whiteness to calotype and other photographic pictures, and at the same time make them more "permanent," they are plunged into a hot solution of "hyposulphite of soda (or any other soluble hyposulphite)," then removed, washed, and dried. After this process the picture may be waxed "by causing melted wax to penetrate into the

"pores of the paper, the object of which is to give increased transparency."

2nd. To make calotype or other photographic paper more sensitive, it is exposed to the action of a warm plate of iron during the formation of the picture.

3rd. The preparation and use of "io-gallic paper." "Iodized paper" is washed with a saturated aqueous solution of gallic acid. When wanted for use in the camera, it is washed with a solution of nitrate of silver, which renders it sensitive to light.

4th. The preparation of dry "calotype paper." "Iodized paper" is washed with the "gallo-nitrate of silver," containing only a small proportion of the nitrate instead of equal parts as used in making moist "calotype paper." This paper is still sensitive to light and can be used in a copying frame, but it "can easily be dried at a gentle fire without being spoiled thereby."

5th. A photographic copy is taken in the usual way, except that the light is allowed to act upon it twice the usual time. It comes out too dark, is washed, and then plunged into an iodide of potassium solution, which brightens the picture and causes the lights to assume a pale yellow tint; by exposing the picture to the light this effect may be increased. "The picture is then washed, and then plunged into hot hyposulphite of soda" (as in the 1st improvement) until the lights are of a white colour.

6th. To obtain pleasing effects, a paper photograph is waxed, which makes it more transparent; a sheet of white or coloured paper is then fastened behind it.

7th. Obtaining enlarged photographs. An enlarged negative calotype picture is obtained by throwing a magnified image of a small photograph upon "calotype paper," by means of lenses; positive copies are obtained in the usual manner. Large portraits can thus be taken without the sitter being obliged to sit an inconveniently long time.

8th. "The application of photography to printing by arranging moveable letters or figures so as to form pages, and making photographic images thereof." Letters (cut out from some pages of letter-press) are composed and fixed in proper order upon a sheet of white paper; a photographic negative is taken from this, and the requisite number of positive copies taken from it. Another method consists in using a camera obscura to throw upon sensitive

paper the reduced image of a tablet, on which large letters have been suitably arranged in grooves.

9th. "Photographic publication," or the multiplication of positive photographs by a certain combination of processes. To form the negative copy, writing paper is dipped into salt water, wiped, and dried; it is then washed with a solution made by precipitating nitrate of silver by means of ammonia and re-dissolving the precipitate, and dried; this prepared paper (called "copying paper") is then used in the copying frame. A negative of distant objects may be obtained with a camera upon "calotype paper." The negative copy upon "copying paper" is fixed by being washed with warm water, placed in a solution of hyposulphite of soda, and all removed that is soluble in water by plunging it into two or three baths of warm water consecutively; it is then dried, and, if necessary, waxed. The "calotype" negative may be fixed as set forth in the 1st improvement. From either of these negatives, the requisite number of positives is obtained upon copying paper by means of the copying frame, and fixed in the same way as the negative copy was.

The terms "calotype paper" and "iodized paper" are used in the same sense as that employed in N° 8842. "A general reference is had to what has been explained and made known" in N° 8842.

[Printed, 4d. See Repertory of Arts, vol. 3 (*enlarged series*), p. 47; London Journal (*Newton's*), vol. 23 (*conjoined series*), p. 430; and Artizan, vol. 2, p. 23.]

A.D. 1843, November 21.—N° 9957.

CLAUDET, ANTOINE FRANÇOIS JEAN (*a communication*).—This invention "consists in rendering the daguerreotype picture susceptible of producing by printing a great number of proofs or copies, thereby transforming it into a complete engraved plate."

The plate is first delicately engraved, the "biting in" is then completed, and, lastly, the plate is protected "from the effects of wear produced by the operation of printing."

The preparatory engraving.—The plate is first cleaned by immersion in a weak solution of nitric acid, washed, immersed in "alcoholized potash," then in the biting acid (called "normal acid"), washed, and then treated with "ammoniacal chloride of

"silver," again washed, heated in caustic potash and left to cool. By repeating these operations a second biting is produced, and by again repeating them (stopping, however, before the ammoniacal chloride of silver is used), a third biting is produced. The plate is then dried, polished with pumice stone, and the chloride of silver filling the black parts removed by means of the normal acid and the ammoniacal chloride of silver solution. The "normal acid" is composed of nitric acid, "nitrate" [nitrite?] "of potassa," and common salt, the whole much diluted with water; other solutions used intermediately to the principal ones above mentioned are, a weak solution of caustic potash, a weak solution of ammonia, and distilled water.

The completion of the "biting in."—The plate is inked as copper-plate printers do, but with a siccative ink, dried, and polished on the white parts; it is then electro-gilt, cleansed by means of boiling caustic potash, and the lamp black (if any) removed by rubbing the plate with a crumb of bread. The plate is then bitten in by aquafortis (which does not attack the face covering of gold) "according to the ordinary process used by engravers."

The protection of the plate.—The surface of the plate is electro-coated with a very thin pellicle of copper; it may then be used to print from. When this thin coating begins to show signs of wear it must be removed and a fresh electro-coat applied in its place. To remove the pellicle, a dilute solution of nitric and nitrous acid, or a caustic solution of ammonia, may be used.

[Printed, 4d. See London Journal (*Newton's*), vol. 25 (*conjoined series*), p. 111.]

A.D. 1849, April 17.—N^o 12,575.

ALLIOTT, ALEXANDER.—This invention relates to improvements in various kinds of registering apparatus.

The Specification and Drawings describe and show "apparatus for ascertaining and for marking or registering the force or pressure of wind, of water, and of steam, the weight of goods or substances, and the velocity of carriages; also an apparatus for ascertaining, under certain circumstances, the length of time elapsed after carriages have passed any given place, and for enabling the place or direction of floating bodies to be ascertained."

The "improvements in apparatus for enabling the place or direction of floating bodies to be ascertained, consist in the employment for that purpose of the mariner's compass, in combination with *chemically prepared paper*, moved by suitable clockwork." The following is an apparatus by which the direction in which a vessel is sailing may at every moment be registered :—The registering paper is "prepared by some suitable photographic process," and ruled with five lines by which eight divisions of the compass are shown ; it is caused to travel uniformly in a line parallel with the sides of the vessel, immediately below the compass card, by means of rollers actuated by clockwork. The light passing through two small holes in the compass card marks the sensitive paper according to the course of the vessel. "A separate scale divided into parts of equal length, corresponding to the rate of motion given to the paper, must be employed to measure the length of time the vessel sails in any particular course." "During the night some artificial light must be used."

[Printed, 2s. 6d. See *Mechanics' Magazine*, vol. 51, p. 381 ; and vol. 53 p. 361 ; also *Patent Journal*, vol. 8, p. 55.]

A.D. 1849, December 19.—N° 12,906.

TALBOT, WILLIAM HENRY FOX, and MALONE, THOMAS AUGUSTINE.—1st. "The use of plates of unglazed porcelain to receive the photographic images." The porcelain plate is prepared for use by giving it a coating of white of egg, and gently drying it at a fire ; the plate being thus prepared, the remainder of the process and manipulation does not differ from that ordinarily employed in making photographic pictures upon paper. The process described is nearly the same as that set forth in N° 8842.

2nd. "A method of converting or changing negative photographic images into positive ones." To produce the negative picture, a clean plate of glass is covered with a film of albumen by pouring a solution of albumen over the glass, and drying it ; the film is then iodized by exposure to the vapour of iodine, dipped into nitrate of silver solution, placed in the camera, and treated with an aqueous solution of gallic acid, which develops the latent picture. To convert this picture into a positive picture, a solution of nitrate of silver is allowed to stand some time on the plate ; the resulting picture is still negative if viewed by transmitted light.

No. 20.

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but, if viewed by reflected light, is positive. To view the positive image well, the glass should be placed upon a dark surface. The positive picture thus obtained must be fixed in the usual way. Other surfaces are stated as being advantageous for this process, such as talc, varnished or oiled paper, dark coloured porcelain, and other dark surfaces. Instead of albumen, gelatine or other substances of animal or vegetable origin may be used.

3rd. The use of varnished or other transparent paper "to support a film of albumen for photographic purposes." The varnished paper is coated with albumen on one side, and rendered sensitive to light by exposure to the vapour of iodine, as in the 2nd improvement. This paper is useful for "photographic pictures giving panoramic views of scenery, which are produced upon a curved surface by a movement of the object glass of the camera."

4th. "A method of obtaining more complete fixation of photographic pictures upon paper." In addition to the usual fixing process, the picture is dipped into a boiling solution of caustic potash. To give an agreeable tint to the picture it may then be exposed to the vapour of sulphuretted hydrogen.

5th. Forming photographic pictures upon steel plates. A mixture of solution of iodide of potassium and albumen is uniformly spread over the plate, and dried. The plate is then washed over with an alcoholic solution of "gallo-nitrate of silver," and is ready to receive the photographic image, which is to be fixed by hyposulphite of soda.

A Disclaimer was enrolled May 1, 1855, by William Henry Fox Talbot, in which the 1st, 3rd, 4th, and 5th portions of the invention are disclaimed; also that part of the 2nd improvement which refers to other surfaces besides glass, is disclaimed.

[Printed, 5d. See Repertory of Arts, vol. 18 (*enlarged series*), p. 97; *Mechanics' Magazine*, vol. 52, p. 518; and Patent Journal, vol. 9, p. 148.]

A.D. 1851, June 12.—N^o 13,664.

TALBOT, WILLIAM HENRY FOX.—1st. A method of producing photographic images upon glass plates. Pictures thus obtained are called "amphitypes," in consequence of their appearing either positive or negative, according to the light in which they are held. A clean plate of glass is covered with a film of albumen, which is dried, dipped into a nitrate of silver solution, and dried again, washed, coated a second time with an albuminous

film, treated with proto-iodide of iron, containing excess of iodine, acetic acid, and alcohol, and dried. When required for use, the plate is dipped into a solution of nitrate of silver, containing acetic acid; the photographic image is then impressed. To develop the latent image the plate is dipped into a solution of sulphate of iron. To fix the picture, it is dipped into hyposulphite of soda solution, washed, cleaned with cotton and water, and dried. The surface may then be coated with a protective covering of varnish or albumen.

An arrangement for using this invention when the operator is on a journey is fully set forth. A plate prepared for use in the camera is dropped into a glass cell in the camera, which is supplied from the outside with nitrate of silver solution; the image is then taken, and the cell containing the plate is consecutively supplied with the proper quantities of sulphate of iron solution, distilled water, and hyposulphite of soda solution, and is then removed from the camera, having been in the camera (and therefore not exposed to extraneous light) from the time of sensitizing the picture to its fixation. Instead of pouring the contents of the bottles into the glass cell, stop-cocks and supply pipes may be used. The glass cell has an exit pipe.

2nd. Taking "photographic pictures of objects which are in rapid motion." The glass plate being prepared as set forth in the 1st improvement, and properly arranged in the camera, the moving object is illuminated by the discharge from a large electrical battery. The instantaneous image thus impressed is treated as in the 1st improvement, and the result is a distinct positive image of the moving body upon the glass, "the rapidity of the motion not affecting the accuracy of the delineation."

A Disclaimer was enrolled March 8, 1854, by William Henry Fox Talbot, in which the arrangement for using the 1st part of this invention when the operator is on a journey is disclaimed; also the whole of the 2nd part of the invention is disclaimed.

[Printed, 6d. See Repertory of Arts, vol. 19 (*enlarged series*), p. 41; and Mechanics' Magazine, vol. 55, p. 497.]

A.D. 1852, September 23.—N° 14,302.

TARDIEU, JACQUES LÉON.—"Certain improvements in the colouring of photographic images."

The paper photograph, after being varnished, is mounted either

on a frame, or on a sheet of glass. Oil colours are preferred to be used; they are laid on at the back of the photograph thus rendered transparent, "the transparency of the paper permitting the colours to appear in all their brightness on the paper side of the photographic image."

"The final operation for the preservation of the images" consists in glueing (or otherwise sticking) "on the colour," one or several sheets of paper, tissue, suitable fabric, pasteboard, wood, or other suitable substance of slight thickness. Cloth or canvas, covered with paint in the same manner as canvas for paintings, may be used to glue the photograph on, pressure being used to attach the surfaces, and a proper varnish afterwards applied to the surface of the image.

[Printed, 3½d. See *Mechanics' Magazine*, vol. 58, p. 296.]

PATENT LAW AMENDMENT ACT, 1852.

1852.

A.D. 1852, October 2.—N^o 179.

NEWTON, FREDERIC.—"Improvements in the apparatus to be employed for producing photographic pictures."

This invention consists in "an improved arrangement of apparatus for taking photographic pictures without the use of a dark room;" the sensitizing, developing, washing, and fixing operations being either performed in the camera itself, or in a box attached to it, without handling the plate or introducing the hands into the camera.

One method consists in introducing the glass plate covered with collodion "into a glass vessel placed in the camera, and supplied in turn with the proper solutions for rendering the plate, first,

"sensitive, then to develope and finish and fix the picture." This method is set forth only in the Provisional Specification.

A second method consists in suspending the glass or other plate over an aperture at the bottom of the camera, so that the vessels containing the chemical solutions may be successively introduced from below, and the plate thereby submitted consecutively to their action.

A third method consists in making the vessels slide in grooves under the camera, so as to come successively under the plate, which is consecutively dipped down into them, the plate being for that purpose attached to a rod working in a stuffing box at the top of the camera; or the stuffing box may move in grooves, the troughs being fixed.

A fourth method consists in placing the troughs inside the camera, and having a top chamber, into which the plate can be drawn out of the respective solutions by means of a rod and stuffing box.

A fifth method consists in placing the sensitized plate in a dark chamber with a moveable shutter in the camera, impressing the image, and then transferring the dark chamber to the top of a box which contains troughs of the several solutions; these troughs are successively brought under the plate, which is consecutively dipped into them, and is thereby acted upon so as ultimately to produce the finished picture. The cover of this box is so made (with hinges) that, when it is shut, sheets of vulcanized India-rubber come down upon the troughs, and preserve the solutions in them perfectly air-tight.

[Printed, 7½d.]

A.D. 1852, October 29.—N° 565.

TALBOT, WILLIAM HENRY FOX.—This invention refers to engraving pictures, obtained by photographic processes on steel plates; the engraved plates can be used for printing from.

A steel plate (prepared for the use of engravers) is dipped into a solution containing vinegar and sulphuric acid, coated with a mixture of gelatine and bichromate of potash, impressed with the photographic image by means of the copying frame, and washed. The film of gelatine is originally yellow; a yellow image on a brown ground is produced by the action of light, and the washing

removes all the bichromate of potash and the greater part of the gelatine from the parts of the plate upon which the sun's rays have not acted; the consequence of this is that the image is whitened. The photographic part of the process is completed by dipping the plate into alcohol, and placing it to dry in a vertical position.

The plate is then etched by means of a solution composed of a certain proportion of "bichloride of platina," containing a little free acid and water. The plate is placed horizontal, and has some of this solution poured upon it, "and quickly diffused and spread over the whole plate with a camel's hair brush;" the etching is finished, when a very distinct and regular black image of the object is obtained.

"Photographic veils."—To produce the effect of engraved lines or of uniform shading, the image of a piece of folded gauze, or other suitable material, is impressed upon the gelatine prior to the image of the object required being formed.

Plates of zinc or lithographic stones are also readily engraved by this process.

[Printed, 4½d.]

A.D. 1852, October 30.—Nº 575.

LUCENAY, PIERRE BERNARDET DE.—"The production of "photographic images by means of artificial light."

To obtain an image of a "stereotype" [stereoscopic or photographic?] plate on unpolished glass. The artificial light is reflected by a mirror, so as to pass through lenses, through the "stereotype" [?] "plate, which is to be copied," then through "an ordinary daguerreotype objective" on to the glass plate where the required representation is produced.

Instead of receiving the image on a sheet of unpolished glass, it may be received on photographic paper, or on a glass plate coated with collodion, and sensitized so as to fix the image thus produced.

"The light is produced either by the galvanic battery" or by "refractory bodies heated by lighted oxigen, or by the combustion of pyrotechnic compositions, or by any other suitable means." When parallel rays of light are required, a parabolic reflector is used, the light being placed in its focus.

"The light is rendered diffuse for portraits. In this case the interposition of blue cobalt glasses will be required, and the reflectors will be a simple screen of a dull ground placed behind the luminary." This application of the invention is not mentioned in the Complete Specification.

[Printed, 54d.]

A.D. 1852, November 9.—N° 693.

MABLEY, WILLIAM TUDOR.—"Ornamenting glass and other transparent or partially transparent substances for windows and for other purposes," by means of photographic designs formed thereon.

A design for a window or lamp may be produced by copying the object required upon glass by the collodion or other process, fixing the image, and applying a transparent varnish to protect it from injury; this, however, will be a negative representation, and not suitable for many designs.

To produce a positive design, a negative photograph (prepared by superposition or by the camera) is used as the original to form a positive picture on the glass by means of the collodion process. One negative will serve to produce a number of positives.

Positives may also be produced on a different scale from their negatives by means of the camera, which also affords the means of combining various negatives into one design. The effect is heightened by placing ground glass or enamelled glass behind the positive picture. The boldness of the picture may be increased by the usual means, and is sometimes essential, in the application of photography to this invention.

To facilitate ornamentation, the sensitive film, with the image on it, may be transferred from one surface to another; parts of surfaces only may be ornamented in this manner; also curved surfaces may be thus made receptive of photographic images. By this means designs may be made up of several photographs, and thus large designs produced that it would not be possible to photograph at one operation.

The designs may be protected from injury by varnish or by a sheet of plain glass.

[Printed, 54d.]

A.D. 1852, December 29.—N^o 1196.

POWER, JAMES.—This invention consists of “silvering all
“ sorts of metals and of glass,” “by a solution of silver, with
“ the aid of electricity, and of covering the said coating of silver
“ with a coating of copper, in the usual way, and in certain cases”
of detaching “the silver and copper plate from the glass, to serve
“ for daguerreotype, photograph, and other similar purposes.”

The solution of silver consists of nitrate of silver, nitrate of ammonium, and “nitrate of silver of alcohol (spirits of wine gunpowder proof)” [the Provisional Specification says, “nitrate of alchool (spirits of wine gunpowder proof)”]; to this is added a certain quantity of “resinous spirit,” consisting, by preference, of gum galbanum and spirits of wine.

For laying a very thin coating of silver upon glass to give it a conducting surface, the above solution has a few drops of spirits of cloves mixed with it; the glass plate is then transferred to another silvering bath (formed as described above), connected with a galvanic battery, then a coating of copper given by the usual galvanic means.

These silvered plates may be said to be electro-cast upon glass; “chrystal, porcelaine,” and other non-metallic substances susceptible of receiving a perfect polish, may be used. The metallic plate, when detached from the glass, is of the most perfect polish, “requiring neither flattening nor polishing, and is most beautifully adapted to the use of daguerreotype and photographic portraits, views, &c.”

[Printed, 4½d.]

1853.

A.D. 1853, January 25.—N^o 193.

MAYALL, JOHN EDWIN.—This invention “relates to the pro-
“ duction of imitation crayon drawings or portraits in or by the
“ photographic process by the aid of a mechanical contrivance
“ interposed between the object and the camera.”

This contrivance consists of a disc, with a central aperture in it of the form of a large star, which disc is slowly revolved by means

of clockwork. "The central or free open portion of this star is sufficiently large to admit the rays from that part of the object which is to be shewn in strong light, or as a firm sharp image, whilst the rays from those exterior parts which are to be gradually shaded or deepened off to a dark or light background are partially intercepted by the converging points of the star. With this apparatus the intensity of the light is gradually diminished, and the pictures taken in conjunction with it possess the required softened off crayon effect. The apparatus is applicable to every kind of camera, and by placing it at different distances from the camera different portions of the image may be softened off."

"The pure stellar shape of aperture is not essentially necessary for the end in view, inasmuch as other shapes would answer for producing the graduation of the rays."

[Printed, 84d.]

A.D. 1853, March 23.—N° 711.

CLAUDET, ANTOINE FRANÇOIS JEAN.—"Improvements in "stereoscopes." This invention consists:—

1st. In "the producing of pleasing and novel optical illusions by means of a peculiar construction and arrangement of some of the parts, which are made moveable so as to impart to the picture the appearance of moving figures."

To enable the picture to "be seen in a natural position, and not reversed, as is usually the case," a mirror is placed in the stereoscope at an angle of 45° to the plane of the picture, and the eye pieces are placed at the back of the stereoscope, so that the line of sight is parallel with the plane of the picture.

In another improvement, a slide, adapted to the eye pieces, moves backwards and forwards, and thus opens and closes each eye piece alternately. The pictures are made differently, so that the objects are not similarly placed (but differently viewed) in each, as in the case of ordinary stereoscopic views. One view shows a person with his hat on, for instance; the other the same with his hat off; by the action of the slide it appears that the figure is taking off his hat. "An increased effect and great variety will be produced by combining a number of pictures together in the form of a cross, so arranged as to exhibit alter-

"nately under each eye from different positions, so that the observer may, in succession, see eight different pictures, all in different attitudes." Two crosses are used; they are mounted on horizontal axles in the body of the stereoscope, and are rotated by a coiled spring, free to act by the movement of the slide.

2nd. "In so constructing and combining the several parts of which the stereoscope is composed that the instrument may be collapsed and brought into a small compass, so as to be rendered more conveniently portable than ordinary rigid stereoscopes."

The mirror stereoscope mentioned in the first part of the invention is rendered portable by making the bottom of the stereoscope correspond to the bottom of the case formed by the instrument when folded; the ends of the instrument form the lids, the mirror with its "lids" fold up against the back of the instrument, which back is hinged to the bottom, and the eye pieces are made collapsible by means of helical springs.

In another construction, "immediately the fastening which holds the instrument in a closed state is undone, all the parts will be at once made to assume their proper position for viewing a picture." The bottom of the closed instrument corresponds to the bottom of the instrument when in use, and the lid to the back; the said back supports the eye-piece flap, as well as another flap which forms the partially open front of the stereoscope. The eye pieces are as in the folding mirror stereoscope. The instrument is ready for use when the cover is opened, the flaps being made to open by an elastic strap. A modification of this construction consists in supporting the eye-piece flap by a central partition, which springs into its proper position by an elastic spring. Another modification consists in altering the external form of the instrument so that the eye pieces need not be collapsible.

"Another form of making the instrument consists in attaching the eye pieces to two flaps, which have holes to look through made therein, and are hinged to a central vertical partition, which is made moveable in a vertical guide, so that it may be moved up or down for the purpose of altering the focus when required." This instrument will open without assistance from the observer. The top and bottom (together) of the case form the bottom of the instrument when in use. In a modification of

this form the vertical guide forms the back of the instrument and also the top of the closed box ; the eye-piece flap is in one piece, and has an overhanging flap for a shade.

[Printed, 6½d.]

A.D. 1853, May 21.—N° 1260.

SCOUTETTEN, HENRI JOSEPH.—This invention is entitled “ An improved plastic compound applicable to various ornamental and useful purposes,” and (amongst other things) it relates to rendering paper impermeable, which impermeable paper “is suitable for photography.” This application of the invention is not mentioned in the Provisional Specification.

“ When it is desired to render paper or stuffs impermeable, the caoutchouc and the gutta percha must be separately dissolved in sulphuret of carbon, in the proportion of eight of gutta percha for one hundred of sulphuret of carbon, well purified ; the solution is left to rest during eight days, and the white of eggs is added to it ; when the impure matters are deposited it is poured forth to obtain an almost colorless liquid. Paper or stuff may be then steeped in this liquid, and drawn from it by passing them between cleansing rollers, which equalize the layer of the matter.”

[Printed, 2½d.]

A.D. 1853, July 8.—N° 1629.

BRETT, JACOB (*a communication*).—(*Provisional Protection only.*) “ This invention consists in combining together into one apparatus two photographic cameras in such a manner that two stereoscopic pictures may be taken at the same time and on the same plane. The instrument is arranged in such manner that the angle at which the two pictures are taken may be varied at pleasure, but at the same time retaining the distance between the pictures on the plane always constant.”

“ The invention also consists in obtaining from a negative photographic picture a positive picture of either a larger or smaller size than the original negative, by so arranging the apparatus that the light which passes through the negative picture (which is preferred to be on glass) is caused to pass through a series of lenses which bring the light to a focus at the other end of the

"apparatus, where a prepared surface is placed to receive the
 "positive image, the size of which will vary according to the
 "distance at which the negative picture is placed from the
 "lenses."

[Printed, 2½d.]

A.D. 1853, October 31.—N° 2510.

GOËTHEL, CHRISTIAN, and ZIMMERMAN, CHARLES MORITZ.—(*Provisional Protection only.*) "Improvements in stereoscopes."

"The improved portable stereoscope" "consists principally of
 "three parts hinged together so as to allow of the whole being
 "folded up."

The Drawing shows an instrument with a moulded base, which constitutes the "centre piece" or back of the stereoscope when in use. Two vertical planes are hinged to this base; one carries the lenses, the other the picture to be viewed. These planes may be held in a vertical position by ties, and are also capable of being folded down (one over the other) on to the base.

"The distance of the verticals is regulated according to the
 "focal distance of the lenses. This arrangement allows of a more
 "minute examination of the details of the object, and the whole
 "when folded up occupies no more room than a small sketching
 "block."

[Printed, 4½d.]

A.D. 1853, November 3.—N° 2552.

DUPPA, BRYAN EDWARD.—"Improvements in coloring photographic pictures."

These improvements "consist of rendering the front surfaces
 "transparent with suitable varnish, and applying colors to the
 "back surfaces, by which means the laying on of the colors
 "will not require that artistic skill heretofore necessary, and
 "results are obtained which cannot be obtained by the coloring
 "on the front surface."

A coating of wax, mastic, or other varnish is given to the front surface of a paper photograph; this process renders the paper transparent. Oil colours are then suitably applied to the back of the picture by means of a brush; the colour being applied uni-

formly (in most cases), the lights and shadows are entirely produced by those of the photographic picture itself. The back of the picture is then cemented on to a surface of white lead spread over cardboard, and, finally, the front of the picture is again varnished.

The image shown by the photographic picture may be reversed by colouring the "face" or front of the photograph, the paper being rendered transparent as explained above; "the photographic image will then be seen through the paper, and the colours through both."

[Printed, 2½d.]

A.D. 1853, December 8.—N° 2856.

LAVERDET, MARCEL GUSTAVE.—(*Provisional Protection only.*)

"This invention relates to a mode of coloring photographic pictures, so as to give them a life-like or natural appearance, without impairing the exactitude of the photographic image, as is the case with the ordinary method of coloring, and without requiring the manipulation of a skilful artist."

The photograph is rendered transparent "by coating the back with varnish, and causing it to penetrate the pores of the fabric containing the picture." When the varnish is dry, oil colours are laid on the back of the picture, "so as to imitate as closely as possible the natural tint of the object represented."

"These colors may be diluted with rectified essence of turpentine so as to obtain the requisite tints, care being taken to saturate the paper, so that the color may penetrate through to the other side."

"The picture is then allowed to dry, and is afterwards varnished on the front side. If the tones are not correct they may be removed by means of essence of turpentine, and others laid on without injuring either the picture or the paper."

"It is only now necessary to place the photographic picture upon a white ground and the operation is complete."

[Printed, 2½d.]

1854.

A.D. 1854, January 18.—N° 125.

BOURQUIN, JEAN PIERRE. — (*Provisional Protection only.*)
This invention relates :—

1st. To a method of making troughs “for holding the various chemical solutions required in photographic processes.” The troughs are made “of a square, rectangular, or other conveniently shaped framework of wood, in which a glass bottom is cemented in any suitable manner by means of a cement which is not liable to be acted upon by the chemical solutions to be employed.”

2nd. “To a method of levelling the troughs or vessels, so that the same depth of liquid may be maintained in every part of the trough.” Three or more levelling screws are adapted to the framework of the trough; these screws “pass through screwed shoulders or brackets, fixed on the tray, trough, or vessel, and form the feet whereon the vessel rests.”

[Printed, 3d.]

A.D. 1854, February 20.—N° 407.

URIE, JOHN.—“Improvements in photographic pictures.”

To give photographs on glass or other transparent plates, “the effect of standing out in high relief from the apparent image surface,” “the back of the glass or the surface opposite to that on which the image is taken” is “coated with a black varnish or other pigment; care being taken to confine this reverse coating to the exact area opposite to or covered by the picture, or that portion of the picture to which the appearance of relief is to be given.” Paper or other dark material may be used to give the effect of relief, “and two or more kinds of reverse coatings may be used.” In some cases the background may be coloured and shaded, “or the part uncovered by the actual image may be treated with fluoric acid.” Different degrees of relief may be given by using two or more thicknesses of glass or other transparent material, “and by putting the dark reverse coating

“ for one part of the picture at a greater or less distance from the picture surface than that for another part.”

By another process, plaster of Paris or other plastic substance is poured or deposited upon the surface of a positive image on glass, and, when solidified, the substance is detached from the glass, “ taking with it the positive image film.”

[Printed, &c.]

A.D. 1854, April 7.—N° 808.

FONTAINEMOREAU, PETER ARMAND LE COMTE DE (*a communication*).—(*Provisional Protection only*.) “ Certain improvements in the preparation of photographic paper.”

“ The invention consists in the construction of an apparatus by which photographic paper is instantaneously obtained, and which shews visibly the progress in coloration of the proofs, producing at the same time the degree of heat favorable to the operation.

“ It is composed of pans with edges perfectly flush, resting on a plate of glass, to allow the liquid chemical solution spread on the surface of the paper to combine with it, by absence of any intervening atmosphere, light, dust, &c.

“ Secondly, of a frame with sliding door, which perfectly encloses the moistened paper, so as to preserve it from the effects of light, though the operation takes place in open day.”

[Printed, &c.]

A.D. 1854, April 7.—N° 809.

SAUGRIN, LOUIS FRANÇOIS.—(*Provisional Protection only*.) “ Improvements in the construction of stereoscopes.”

This invention “ consists in constructing stereoscopes with moveable lenses and collapsable springs, and rendering them more portable than heretofore.”

This instrument is made so as to be entirely compressible into the stereoscope case; for that purpose the piece carrying the lenses is connected to the bottom of the case by means of a “ rectangular spiral spring.” The bottom of the case forms the bottom of the instrument, and has an aperture “ to show the object by transparency.” The lenses are “ set in a sliding piece, to facilitate the change of glasses.” “ Black stuff is stretched ” around the

"nose piece," "so as to prevent the reflection of the face on the object."

A spring "which can be entirely compressed," and applicable to a stereoscope, is shown in the Drawing, and consists of two flat semicircular springs in the case, and one abutting on them to support the eye piece. Another form of spiral spring is also shown.

[Printed, 5d.]

A.D. 1854, April 7.—N° 822.

NEWTON, WILLIAM EDWARD (*a communication*). — "Improvements in producing stereoscopic pictures, and in the apparatus for exhibiting such or similar pictures."

1st. The method of producing stereoscopic pictures "consists in taking the two pictures from the extreme ends of the hypotenuse of a right angle triangle, one of the sides of which is horizontal and the other vertical, each of the sides being two and a half inches, or thereabouts, in length." One method of practically accomplishing this object, is to take the first picture with the camera risen up two and a half inches from its table, by means of studs or pins, and to take the second picture with the camera placed flat on its table, the pins passing through apertures distant horizontally from its former position two and a half inches. Other methods can be used "which shall allow the camera to be put into the two positions required."

2nd. The method of exhibiting stereoscopic pictures consists in giving them "a panoramic motion into and out of the field of vision by means of machinery." In a reflecting stereoscope the pictures are brought in succession into the field of view by means of screw and screw-wheel machinery. The pictures are arranged in sets, one set on each side of the instrument; each picture has a rack attached to its under side, by means of which spur wheels on the screw-wheel shafts give the desired "panoramic" motion; by means of pins on vertical shafts (worked by the screw-wheel shafts) the pictures have also a lateral motion, to enable them to place themselves in the case in proper order. The machinery is worked by a crank handle in front of the instrument.

[Printed, 1s.]

A.D. 1854, April 13.—N^o 868.

DEVINCENZI, GUISEPPE.—“ A method or methods of producing engraved, figured, and typographic surfaces for printing and for embossing from, and for ornaments, also certain machinery employed therein.”

The following processes treated of in this Specification have relation to photography:—

Impressions are produced on metallic surfaces “with some greasy matters,” by means of a photographic process, either direct “or on a lithographic stone, to transfer from afterwards an impression of any bituminous or resinous substance.” Other means of producing these “impressions” are set forth at length.

To engrave these “impressions” they are varnished on the surface by a process similar to that of inking, and engraved by chemical or electro-chemical action; or the “impressions” may be simply warmed and dusted over with bituminous or vitreous matter, which is melted, and figured surfaces are thus obtained.

Another process consists in producing the “impressions” upon an electro-deposited layer, and subjecting the resulting surface to the solvent action of the electric current in a suitable liquid. Another method is to electro-coat all such portions of the “impressions” “as have no impressions with a layer of a different metal,” then to “remove the material in which the impressions are taken,” and either to use the resulting surface as a deep engraving by electro-etching it in a liquid which does not act upon the layer, or to use it as an ornamental surface.

Engravings on non-metallic bodies may be produced by means of the above-named “impressions” in combination with the chemical action of acids.

The “impressions” obtained as above may also be used “to produce electro-plate reproductions or stereotype plates.”

Besides the above-mentioned processes to which the method of producing “impressions” by means of photography are applicable, other modes of producing ornamental surfaces are set forth at great length in the Specification; also many applications of this invention are explicitly stated. An electro-magnetic “printing machine,” to work with a limited number of types is described in the Specification and shown in the Drawings.

A.D. 1854, April 27.—N° 956.

JOHNSON, JOHN HENRY (*a communication from Henry Beaud*).—"Improvements in polishing and flattening metal plates," more especially Daguerreotype plates.

The plates are first polished on a flat table, which is provided with a ledge and moveable side. The plate is retained firmly on the table by being nipped between the ledge and the moveable side, the moveable side being provided with guide plates and a screw for that purpose. In this position the plate is well polished by the aid of polishing pads and a suitable mixture of impalpable powder and liquid. A pair of the plates are then laid back to back, and a block or "squeezing plate" is placed against the polished surface of each plate, the plates being thus placed between two blocks. The blocks and plates are then fastened together, so as to form one solid piece, by means of a hinged frame carrying a clamp screw, and are subjected to the pressing action of a pair of rollers, "through which the plates are passed two or three times." "When perfectly flattened, the finishing polish is effected by rubbing with the hand, or by suitable polishing mechanism."

It is important that the pressing surfaces of the blocks should be as well and as carefully polished as the surfaces of the plates, before being used.

[Printed, 8d.]

A.D. 1854, May 15.—N° 1080.

SAUGRIN, LOUIS FRANÇOIS.—"Improvements in apparatus for the production of stereoscopic and photographic pictures."

The Specification and Drawings describe and show a camera having three object lenses, and which is capable of taking three stereoscopic views at one set of operations, when used in connection with a second camera, in which the arrangement of lenses and plates is reversed. The three lenses are placed over one another in a vertical line, and have hinged fronts, so that they may have such an inclination as to enable a true picture to be taken by each. The lenses are not placed in the centre line of the camera, but are nearer to one side than the other.

In taking a picture, "the sides of the apparatus, where the lenses are nearest to the edge, are placed towards each other." To obtain "the angle of two objects upon the same plate," the

operator shuts "the right slide of one of the apparatus and the "left slide of the other apparatus;" then "the frame containing "the plate of the left apparatus" is withdrawn, and placed "in "that of the right one, and vice versa." Three pictures, vertically over one another, are first made in one camera, and their stereoscopic copies are made in the other camera. "To obtain "the six proofs double by one operation," three additional lenses are added to each camera.

A similar camera to that described above, but with two lenses instead of three, is described and shown; also another camera, with two lenses placed side by side.

[Printed, 10d.]

A.D. 1854, May 15.—N° 1086.

EAST, FREDERICK.—"Taking photographic views and portraits "in the open air, by means of vertible machinery attached to "a cubical box, by which the changes are seen, and the light and "the time of exposure regulated."

A camera is described in the Specification, and shown in the Drawings, called "the camara chora," and consisting of the following parts:—A removable chest, which fits into the camera; this contains two water baths, a rack, a bottle case, and a drawer. The camera stand, which consists of a number of thin pieces of wood, jointed at the centres and ends; these "form three legs "when drawn out, and three thin squares when closed up;" they fold under each other "into a frame fixed round the bottom of the "camera, and are thus out of sight." A "diverting bath" to excite the plate, at one end of which is a cylinder, from which the exciting solution runs into the bath, when the bath is turned on the axis of the cylinder downwards; this and the following apparatus are interior fittings of the camera. The developing apparatus, consisting of a flexible case, from which the developing fluid is forced (by the compression of a screw) into a "meter;" when its knob is turned the fluid runs over the plate, and develops the picture. The fixing apparatus is on the other side of the camera to the developing, and consists of a similar arrangement; a thin plate of metal ("the developing tray") in connection with a wire is used to spread the fluid over the plate, in the developing and fixing processes. The focussing apparatus, con-

sisting of a rack and pinion arrangement attached to a plate holder; a socket containing a half zone, in which the lens is so mounted that it can be turned upon its axis; a set of "light regulators," admitting different colours and qualities of light; a set of diaphragms; and a "paraphon" or shutter; the light regulators, diaphragms, and shutter, are placed within the mounting of the lens, and turned by keys fixed round the head of the mounting; the focussing is observed with a tube at the back of the camera, provided with a "valve" or shutter. A "monitor," (or time-beater), consisting of wheel-work, actuated by a main spring, and regulated by a fly; a wheel "with elastic points" strikes the time, when required, upon "vibrating wires of different tones;" a dial outside the camera marks the time for exciting the plate; and the exact time of exposure is ascertained by means of a connection from the fly to "the paraphon valve," in the mounting of the lens. Certain outer fittings consist of a "lunette," or "peep-hole," to look into the camera, having a shutter; a "diaphane" or window (with a shutter) to admit such rays of light as will not injure the solution; a handle to carry the instrument, a tap, a waste bag, and "locks and keys" with various other fastenings."

To work the instrument.—The camera is prepared by fixing the legs, taking out the chest, putting the waste bag on the tap and opening the tap. The prepared plate is then placed in the lip of the plate holder, the focus taken by the above described focussing apparatus, and the plate excited by immersion in the "diverting" bath. The picture is then taken, using such diaphragms and "light regulators" as may be necessary, and closing the "paraphon." In developing the picture, light of the requisite colour is admitted through the "diaphane," the plate dropped into the developing tray, and the developing fluid allowed to run over the plate. To fix the picture, the fixing fluid is allowed to run over the plate in a similar way to the process for developing; the operator, during developing and fixing, watches the process through the "lunette." The picture is then taken out of the camera, and washed, rinsed, and dried in the chest. Finally, the waste bag is unhooked, the tap closed, the chest put into the camera, and the legs folded under the camera, preparatory to leaving the field.

A.D. 1854, May 22.—N° 1139.

SPENCER, JOSEPH BLAKEY, and MELHUISE, ARTHUR JAMES.—(*Provisional Protection only.*) “Improvements in photographic apparatus.”

By means of this invention a series of photographic pictures may be obtained, in succession, upon a long sheet of sensitive paper, “the parts of the paper or sensitive surface not for the time being in use being rolled up within the frame of the camera.” “The frame in which the prepared surfaces are employed is fitted up with two rollers;” “in using the apparatus, after one picture has been taken, that part of the prepared sensitive surface is wound up on to one of the rollers, and a fresh quantity of the prepared surface, suitable for receiving another picture, is unwound off the other roller, and so on, till all the prepared paper or surface on the roller has been used. Two rods or tubes of yellow glass are employed to retain the part of the sensitive surface, which for the time being is brought into position in the correct plane or position.” It is preferred to focus directly on to the prepared surface when using waxed paper (instead of focussing on to a plate of ground glass), a plate of yellow glass having previously been placed in front of the lens to prevent the light from injuriously affecting the surface, and also having placed another plate of yellow glass behind the paper with a similar object.

[Printed, 3d.]

A.D. 1854, June 23.—N° 1384.

DREYFUS-WERTH, SALOMON, and MEUNIER, PIERRE.—(*Provisional Protection only.*) “A new or improved system of applying designs to all kinds of fabrics, and of surfaces of wood, marble, and stone.”

This invention “consists in a new or improved system for applying designs to or ornamenting the surfaces set forth in the title.” For this purpose “the chemical action of light upon colours” is applied “directly to the surfaces above mentioned. The surface to be acted upon is first rendered sensitive by subjecting it to one or more baths of any suitable substance, such as solutions of chloride of sodium, nitrate of silver, hyposulphite of soda, chromate of potash, and sulphuric acid.

“ The fabrics or other surface, after being subjected to one or more of these baths, is well washed and dried ; the designs to be reproduced on the surface are then laid or put on it in a suitable manner, and the whole or part of the surface thus treated exposed to the action of solar light during a few moments. The surface having thus received the image or outline of the design, may have any required tint given to it by the usual processes.”

[Printed, 3d.]

A.D. 1854, July 26.—N° 1638.

CUTTING, JAMES A.—This invention refers “to the art of taking pictures photographically on a film of collodion upon the surface of a sheet of glass ;” the process is called “ambrotype.”

The invention is divided into the following parts :—

1st.—Preparing the collodion.—Gun cotton “is plunged into strong alcohol, which effectually deprives it of the water which it contains, without exposing it to the atmosphere for the purpose ;” this is an essential part of the invention. From the alcohol the gun cotton is taken immediately to a mixture of sulphuric ether and alcohol which dissolves it, thus forming the collodion.

2nd.—Beautifying the picture and sensitizing the plate.—The collodion, made as described above, is allowed to settle, and decanted. Iodide of potassium dissolved in alcohol is then added to the collodion. “After being well shaken” the mixture has gum camphor added to it ; this is the second essential feature of the invention, and greatly increases the distinctness and beauty of the picture to be produced. This mixture is poured over the glass so as to form “a colorless transparent film,” and, when it has only partially set, it is placed in a solution of nitrate of silver until the ether has escaped from the collodion ; the plate is then ready to be placed in the camera.

3rd.—The completion of the process.—After being exposed in the camera the plate has its latent picture developed “by the application of a solution of protosulphite of iron, acetic acid, and nitric acid ;” it is then washed and its picture fixed by means of hyposulphite of soda solution. The plate is then washed

and dried, thus completing the chemical portion of the process. The third important point in this invention, however, consists in applying "a coating of balsam of fir to the surface of the glass upon which the picture is made, the balsam being confined to the picture plate by a secondary plate of glass;" for this purpose the balsam is "applied in a line along one edge of the glass," and one edge of the other plate is applied to the edge of the first, the two plates are then pressed gradually together and the superabundant balsam thus removed; this process greatly enhances the beauty and distinctness of the picture, and "secures the whole from the action of air, moisture, and dust."

[Printed, 4d.]

A.D. 1854, August 1.—No 1696.

MERRITT, THOMAS EDWARD.—"Improvements in apparatus for taking photographic pictures in the open air."

1st. A dark chamber or box "capable of containing any required number of prepared papers or glasses" is fitted at the hinder part of the camera. "A screw of quick pitch," passing through the back of the box, brings "the prepared papers or glasses forward in succession into the focus of the camera." A second chamber is fitted beneath the camera and the box, in which is placed "a tray deep enough to hold the prepared papers or glasses edgewise, and divided into as many compartments as the box is capable of holding papers or glasses;" or the tray may have ears that slide in grooves at the bottom of the camera, thus dispensing with the second chamber. A slit is formed through the bottom of the dark chamber; this can be closed by means of a slide, and is employed to allow each paper or glass to fall into the tray after having been used. The tray is shifted "as it is required to receive a paper or glass, so as to bring forward a fresh compartment for it to fall into." A number of pictures can thus be taken without being exposed to light, and they may remain in the tray "until a convenient time for developing them."

2nd. A small frame of tin, or other suitable material, to hold collodionized glass by means of a spring or springs; this arrangement may also be employed to hold the papers prepared for use in the camera mentioned in the 1st improvement. The paper is

prepared by being placed between two pieces of glass, "which are held together by a strip of paper pasted at their edges."

3rd. "A close box for containing one or more prepared papers or glasses for taking photographic pictures in the open air with a camera of the common description."

Besides the above particulars, the Specification and Drawings describe and show "an improved bath for developing collodion pictures taken in the camera" described in the 1st improvement. The bath is adapted to the camera by means of ears, and consists of two cells communicating with one another by means of a perforated partition. The solution is poured into one cell and the partition admits it to the photograph in the other. There is a lid to keep light out of the bath and a corked spout for drawing off the used liquids.

[Printed, 1s. 4d.]

A.D. 1854, August 11.—N^o 1752.

MONSON, EDWARD.—This invention "consists of a machine or apparatus" "for manufacturing or getting up, cleaning, polishing and buffing daguerreotype plates."

The plate or plates are fixed upon a horizontal platform by means of a holder. This platform rests upon a second platform, and each platform is capable of a rectilinear sliding motion, "the two sliding motions being at right angles to one another." By means of a rapid alternating motion given to the upper platform, and a slow direct motion given to the under platform, the whole of the surface of the plates is brought under the action of the tools for hammering, burnishing, or polishing them. The hammer is made to have a suitable vertical and alternating motion by means of a cam arrangement in combination with a helical spring; the cam raising the vertical shaft that carries the hammer, and the spring (in combination with the weight of the hammer and shaft) forcing the hammer on to the plates. The burnisher or buff is pressed on to the surface of the moving plate by means of a weight at the end of a lever, and besides can have a rotary motion on its axis given to it when required. It is preferred to hammer a number of plates first and then to buff them, but the hammering and buffing may be done at the same time. The buff

is fixed, so as to prevent its rotation, for finally polishing the plate.
“ To prevent the plates from being spoiled, by dust being ham-
“ mered therein,” a blowing apparatus is used.

[Printed, 6d.]

A.D. 1854, November 9.—N° 2373.

PRETSCH, PAUL.—This invention “consists in adapting the
“ photographic process to the purpose of obtaining either a raised
“ or a sunk design on glass or other suitable material or materials,
“ covered with glutinous substances mixed with photographic
“ materials, which aforesaid design can then be copied by the
“ electrotype process, or by other means, for producing plates
“ suitable for printing purposes, or can be applied for producing
“ moulds applicable for obtaining plates.”

To obtain a raised design, the following process is employed :—
A solution containing glue, nitrate of silver, iodide of potassium,
and bichromate of potash is poured over the plate on which the
design is required. When the coating thus formed is completely
dry, the subject to be copied is laid on the prepared surface, and
the whole transferred to the photographic copying frame and
exposed to light. After a sufficient exposure the plate is removed
“ and washed either with cold water or a solution of borax or of
“ carbonate of soda, as may be necessary.” The picture thus
obtained in relief is treated with spirits of wine, dilute copal
varnish, and a weak solution of tannin ; when sufficiently raised
it is washed and dried. The picture may now be copied by the
electrotype, stereotype, or other like process.

To obtain a sunk design :—The previous process is employed,
substituting gelatine for glue and drying the plate after washing
it with spirits of wine ; the picture is then ready to be copied.

Printing ink may be applied to the design developed as above,
and thence zincographic or lithographic impressions obtained.

The pictures have flat surfaces when taken from the copying
frame. By using more sensitive compounds as the iodide or
bromide of ammonium instead of iodide of potassium, designs
can be obtained by the camera.

[Printed, 3d.]

A.D. 1854, November 18.—N° 2447.

LUFF, HENRY JAMES.—(*Provisional Protection only.*) “Improvements in the mode of attacking hostile bodies, also applicable to the obtainment of plans of forts.” Photography is mentioned as a means of obtaining the plans of forts.

These improvements “consist in the mode of attacking hostile forts and towns, or bodies of troops when stationed near to the sea, by having, in connexion with a vessel at sea or in a harbour, a balloon having a telegraphic communication with such vessel, such balloon being freighted with explosive compounds of any description most suitable with the purpose. The balloon having ascended from the vessel, and being then in connexion therewith, can readily direct the movements of such vessel, whilst such movements by suitable connexions can again operate in the position of the balloon, so as to bring the same readily into the most favorable position with regard to the fort, army, or other object to be acted upon, when the explosive compounds may be easily let down in the exact position where the greatest injury can be inflicted. It is also to be observed, that by similar means, plans of fortifications, &c., may readily be acquired by the photographic process. It is obvious, that where inland forts or armies are to be attacked, the balloon may be in connection with any apparatus upon land, so as to effect the same results.”

[Printed, 3d.]

A.D. 1854, December 13.—N° 2620.

FONTAINEMOREAU, PETER ARMAND LE COMTE DE (*a communication*).—This invention “consists in fixing, vitrifying, and coloring photographic images taken by the collodion process upon enamel, metal, stone, porcelain, glass, china, and all kinds of earthenware.”

“Upon a plate of glass is poured a composition consisting of rectified sulphuric ether, rectified alcohol, gun cotton, and hydrate of ammonia; after leaving this layer to dry for a few seconds, the plate is plunged in a solution composed of distilled water, crystallized nitrate of silver, and rectified alcohol, with or without a solvent. The plate is then ready to receive the photographic image in the usual manner; after which it is

“ introduced into a bath composed of filtered water, sulphate of iron, acetic and sulphuric acid. After having washed the proof several times with fresh water, it is plunged into a bath composed of cyanide of potassium and distilled water, and then submitted to the action of a solution of bi-chloride of mercury, hydrochloric acid and distilled water. This operation being terminated, a very sharp permanent proof is obtained, which may be separated from the glass upon which it has been made, by plunging it during a few seconds into water and taking it off with blotting paper. This image may be applied to a surface of metal or glass, &c., of any form by means of a thin solution of gum or other adhesive matter.” It is then baked in a porcelain furnace. The images may be coloured by applying vitrifiable colours either in a state of powder “or mixed with spirits of turpentine, lavender, &c.,” these colours are also baked in.

[Printed, 3d.]

A.D. 1854, December 29.—N° 2745.

THOMPSON, FREDERICK, and WAGSTAFF, WILLIAM.—*(Provisional Protection only.)* “Improvements in photography.”

“ The invention consists in marking on the back of a glass plate on which a picture or photograph has been taken, or upon one or more separate glass, metal or other plates placed behind the same, the outline or form of the object or objects in the picture or photograph, with any sort of varnish, cement, or other material that can mark or define a line, or with paper, cloth, velvet, silk, gutta percha, wood, or other suitable material, and filling the space or part thereof within such outline with one or more coats of the above, or other suitable material, thereby producing an appearance of relief or rotundity. And the same effect may be produced by eating away with any acid or other suitable material the whole or part of the said outline, or any part of the back of the glass or picture, or upon any separate plate of glass, metal, or other suitable material, and coloring or coating the part affected by the said acid or other suitable material, or with varnish or other material before described.

“ The invention farther consists in producing a colored background for photographic pictures, by placing behind the plate

“ on which the picture is produced, or upon or behind one or
 “ more seperate plates of glass or other suitable material, tinted
 “ paper, cloth, velvet, silk, gutta percha, wood, stained glass, or
 “ other suitable material, and which background will add to or
 “ assist the appearance of relief or rotundity before described.”

[Printed, 3d.]

1855.

A.D. 1855, February 20.—Nº 371.

SCHOTTLANDER, HENRY.—The title of this invention is,
 “ Improvements in ornamenting looking glasses.”

Various methods of painting, transferring, or printing ornamental designs “ upon the back of a looking glass not yet
 “ silvered,” and afterwards silvering the same in the ordinary way, are set forth. “Through this process the drawing, design,
 “ &c. appears between the silver and the glass either in black or
 “ colours, as the case may be, and becomes closed in hermetically.
 “ The parts not covered with colour become thereby ordinary
 “ looking glasses, and form the basis or ground of the design,
 “ &c.”

The patentee further states :—“ I further deposit photographies
 “ direct upon glass, colour the same if required, and silver them
 “ afterwards, thereby transforming them partly into looking
 “ glasses, the photography appearing between the glass and the
 “ silver, in manner as heretofore described, by which process the
 “ same are protected against any effects of the atmospheric air,
 “ and consequently retain their freshness permanently. In order
 “ to detach the outlines of a photography upon glass from the
 “ chemical substances which surround them, I apply the described
 “ process of scraping, provided that the design does not contain
 “ too many minute parts; otherwise I cover the photography
 “ itself with varnish, and wash the surpassing chemical substances off with water or other dissolving liquids.”

The process of “ scraping ” above alluded to is thus described :
 —“The drawing or design themselves are formed into looking

"glasses in imitation of inlaid silver by covering the whole surface of a glass on one side with paint, and scraping the colours off those parts where I desire to have looking glass."

[Printed, 8d.]

A.D. 1855, February 27.—N° 426.

BERCHTOLD, ALFRED JEAN.—(*Provisional Protection only.*) The title of this invention is, "Certain improvements in applying the photographic engraving on metals or other materials."

The patentee states:—"I take a negative or positive photograph either on paper, or on collodion, or albumen, or other suitable material, and I produce a grain upon this photograph by printing the grain in black or any other colour upon it from a plate or block or other printing surface, or by perforating or making strokes, lines, or dots upon it by a roller or other instrument, worked by the hand or by machinery.

"The design is then transferred by the action of light to a varnished surface of metal or stone or other suitable material by the process already known, and the varnish is afterwards treated by solvents, and the surface etched by acid, as already known. By this means the strokes, lines, or dots, or grain, are produced upon the metal, stone, or other suitable material by the action of the light, and not by the mechanical application of powdered resin, as heretofore."

"The printing, or marks, or perforations may be made on a separate sheet of paper or other suitable material, instead of being made on the photograph itself. The perforations may pass completely through the paper, or only partially through it."

[Printed, 8d.]

A.D. 1855, March 5.—N° 488.

GARNIER, ARSÈNE LOUIS.—The title of this invention is, "An improved process for producing photographic pictures, which I intend to denominate 'Système Garnier de Photochéographie colorée.'"

The invention consists in:—

1st. "Employing a textile or woven fabric instead of paper as the surface on which the picture is to be produced."

2nd. A certain process "for neutralizing any alkaline salts, and for removing any impurities or injurious matters contained in the fabric or paper employed." For this purpose the fabric is immersed consecutively in boiling water, alcohol, and potash.

Having cleansed the fabric according to the 2nd part of the invention, it is cut into pieces of suitable sizes coated with a paste of rice flour, allowed to dry, and immersed in a mixture of virgin wax, Venice turpentine, and linseed oil; the fabric has thus a body and a finely polished surface, upon which a positive photograph may be obtained in the usual manner, and fixed in a bath "of ammoniacal hyposulphites." "To remove any alkaline salts which may remain after the ordinary washings," the picture is immersed in pure alcohol and hot water. The picture is then ready for the reception of oil colour (which is applied at the back), and can be attached to a suitable flat and even surface and varnished on the face.

The 2nd part of the invention can also be applied to paper photographs after they have been obtained and fixed in the usual manner. The picture is then treated with starch, waxed, coloured on the back, mounted, and varnished.

[Printed, &c.]

A.D. 1855, March 8.—N° 515.

CLAUDET, ANTOINE FRANÇOIS JEAN.—"Improvements in stereoscopes."

1st. "Giving to the interior of the casing or box of the stereoscope such a form that no part of it can be reflected from the pictures or the frame upon which they are to the eye of the observer." "A perpendicular from the tangent at any point which could otherwise be reflected of the curve of the interior of the casing must make with the slide such an angle as will not reflect it to the eye of the observer." The casing of the stereoscope shown in the Drawings has its vertical sections towards the end that receives the pictures composed of curves of contrary flexure.

2nd. Placing within the outside casing two "chambers," each chamber being larger than, but in continuation with, and concentric with each eye tube. These chambers are suitably blackened and have openings corresponding to the form of the picture; they

thus "allow the pictures to be seen freely, and wholly hide the frame."

3rd. An "adaptation of the lenses so as to obviate the necessity of any adjustment to suit observers whose eyes are at different distances apart." Each eye piece is made out of a half lens, "the only transparent part of the lenses through which the observer can view the pictures" being a thin central strip in the longitudinal direction of the instrument; "the other portions of the lenses are blackened and rendered opaque." If the meniscus form of lens be used, "the concave side should be towards the eye, in order to the prevention so far as possible of reflection from the lens."

4th. A "mode of adjusting the foci of the lenses to the focal length usually required by the varieties of long, common, and short sight." The sliding parts of the eye tubes are connected by a cross piece which carries "a small arm, upon which is mounted an index." A graduated scale, fixed on the outside of the casing, enables the index to be suitably placed for correct vision.

5th. Modes of "mounting several slides on a revolving frame, and exhibiting them to view in succession." According to one method a frame revolving on an axis has as many sides to it as it is required to carry slides. To give rotation to the frame a button or "screw" on the axis is turned by hand, and a ratchet wheel and pawl prevents the frame revolving while the picture is being viewed. According to another method machinery is used; by pulling out a bar that carries a rack working into a wheel on the frame, a shutter is made to cover the interior of the eye pieces during the motion of the frame by the rack. On the release of the bar, a "spiral" [helical?] spring in combination with a weighted cord, brings it (the bar, but not the frame) back to its original position, thus opening the shutter and exposing a new slide to view. By fixing the slides on an endless band more slides than four can be arranged in the instrument, and when an apparatus is required to show pictures to several persons at once several sets of apparatus may be mounted in a polygonal box.

6th. "The use for each eye piece of the central part of a whole lens, instead of a half lens, so that the pictures are seen through the lenses at or very near to their centres." In this case "the axes of the eyes of the observer must converge in order to pro-

"duce coalescence." To adapt this part of the invention to the 3rd improvement, the excentric parts of the longitudinal strips must be rendered opaque.

[Printed, 1s. 5d.]

A.D. 1855, March 17.—N° 598.

PETITJEAN, TONY, and PÊTRE, LOUIS (*a communication*).—(*Provisional Protection only*.) "Certain improvements in the manufacture of daguerreotype plates and of electro-plated sheets of metal, part of which improvements may be applied to the production of polished surfaces on metallic articles."

This invention "consists of the following method for giving a perfectly smooth and polished surface to the plates or sheets of electro-plated copper."

A piece of glass is taken, of the size and shape of the plate to be produced, and prepared "to receive the action of the galvanic battery;" it is then electro-silvered and electro-coppered. Instead of being electro-coppered, the plate may be electro-coated with iron or other metal or with "as many layers of different metals as we please. This method of giving several layers of metal we think especially useful for daguerreotype plates, as such plates would form a kind of voltaic pile, and render them more sensible to the chemical action to which they are afterwards exposed. As to the electro-plated sheets of metal used for reflectors and other purposes, we think it sufficient, after giving a coat of silver as before described, to give a single coat of iron or other metal, but we will not limit ourselves in that respect.

"By using proper moulds, metallic articles may receive a high polish by the above-described process."

[Printed, 3d.]

A.D. 1855, March 27.—N° 674.

BOURNE, JOHN COOKE.—This invention relates to portable photographic apparatus, and consists in:—

1st. Constructing photographic apparatus "in such a manner that the box or case in which the camera is contained may serve as a foundation on which the camera may be supported when in use, and when out of use the front part of the camera may be folded into the back part, and be placed in a compartment within the box."

2nd. "Constructing the box or case so that when opened it may form the base for a tent, which is constituted by means of a lath fixed on a centre or pivot at each angle of the inside of the box, the several laths being raised and united at the top in pairs, so as to form, as it were, two gable ends, in order to support a covering of suitable fabric, within which the operations of preparing the sensitive surface, developing the photographic picture, &c. may be performed, the camera remaining suspended from the lid of the box during such operations. The said fabric or covering is confined to the box or foundation by means of an elastic cord, and it has suitable openings in it to admit of the head and hands of the operator being introduced as required."

3rd. "Arranging and constructing the means of adjusting the position of the lens of the camera, so as to ensure its movement and ultimate position in a direction always in that of a curve, the radius of which is the focal length of the lens, the rays of light passing through the centre of the lens at right angles to the surface thereof will fall upon the centre of the picture."

A camera is described and shown, consisting of a "slide case" connected to the lens end of the instrument by means of a dark chamber formed of cloth or other suitable material that will enable the lens end of the instrument to be collapsed against the slide case, so that the camera may be packed in a box. The box contains the camera, a triangular table to which the legs are fixed, and on which the box is fastened by a central bolt and nut, a "triangular developing stand, constructed on the principle of a book hinge," chemicals, plates, washing trough, also laths and waterproof covering for forming the tent. Besides the above there are the legs of the instrument, which are retained on the pegs of the triangular table by means of elastic bands.

In using the apparatus the triangle and legs are set up, then the box is fixed on to "the table so formed," and the camera is fixed and adjusted to the lid of the box. A "swivel foot" and "hinged tail board" allow of the fixing, adjustment, and inclination of the slide case as required; the lens end of the instrument is adjusted horizontally along curved slots, and vertically upon a standard that is bolted to the box lid. When the objects to be taken are at unequal distances from the camera, they may all be nearly focussed for vertical lines by means of a slot in the lens standard in combination with an inclination of the slide case upon the ver-

tical axis of the swivel foot; for horizontal lines this adjustment is made by raising or depressing the lens on the standard, and suitably inclining the slide case by means of the "hinged tail-board." The plate is then prepared under the tent (the camera during this operation being suspended downwards, from the lid of the open box), the tent removed, the box closed, the slide substituted for the focussing glass, the picture taken by exposure of the plate, the tent re-formed, and the picture developed in the usual manner.

[Printed, 1s. 8d.]

A.D. 1855, April 7.—N^o 770.

ROLLASON, ALEXANDER.—This invention "consists of improvements in transferring to paper, linen, cardboard, bone, ivory, wood, metal, or stone, the film of collodion or albumen used in collodiotype or albumenized plates." By this invention a photograph may either be removed "from the glass or plate on which it may have been produced; or, by transferring the plain film on to certain of the substances above named," a new base or medium on which photographic pictures may be taken may be produced.

After having produced the picture in the ordinary way, it is immersed in dilute nitric acid and allowed to dry, coloured (if requisite), and varnished with "asphaltum or Brunswick black dissolved in mineral naphtha to about the consistency of cream."

The film is then transferred from the glass to the substance destined to receive it, by means of a mucilage composed of gum arabic and honey; during the separation of the film, "water, spirits of wine, or other limpid fluid" is introduced between the film and the glass.

"The iridescence" that appears after the transfer may be removed by rubbing the film over with cotton wool and oil, thus leaving a slight stickiness, to which the dry colours known as "mansions" and many other dry colours will adhere." In some instances this last operation may be omitted, and the picture completed by means of water, oil, or varnish colours.

In producing the new medium above referred to, the film is transferred "before the picture is taken instead of after."

[Printed, 4d.]

A.D. 1855, June 7.—N° 1303.

ORANGE, ANDRÉ.—(*Provisional Protection only.*) “Improvements in obtaining representations for commercial purposes of articles for sale.”

“This invention relates to the obtainment of the representations of articles intended for sale, such representations being used in lieu of samples in negotiating with purchasers: such representations are produced by any of the well-known photographic processes, either on paper, glass, or other material, when the articles to be represented are in their finished condition, varnished, polished, burnished, or otherwise treated, so as to reflect the light. It is preferred to take the representations of them before the final finishing stage, or when they present a dull appearance, or such as is suitable for producing a well-defined outline in the camera; or the finished articles may be washed over or prepared in some suitable manner, so as to present the required dull appearance.”

[Printed, &c.]

A.D. 1855, July 7.—N° 1523.

GEDGE, JOHN (*a communication from Louis Samson.*)—(*Provisional Protection only.*) “Improvements in photographic glasses.”

“The ‘panes’ or ‘plates’ to be made are of two kinds, one vitrified and the other not; the latter are composed of two transparent or translucent glasses, colored or not. The proof is obtained on one of these glasses by means of a very delicate preparation of albumine and collodien, permitting it to retain great transparence, so as to enable it to support with facility the subsequent operations. To obtain ‘positive’ proofs on the above” the “types” are arranged “in a framing so as to form a group; this frame is placed behind a second, furnished with drawings or designs corresponding to the types aforesaid forming a whole, the parts of which may be varied at pleasure. The transfer apparatus is furnished with powerful lenzes, and being placed in position, receives the glass prepared as aforesaid with albumine and collodien, on which the light will act in a direct manner, traversing the designs and types aforesaid. The

“ production is now ‘positive;’ it may be taken of any size by
“ merely advancing or withdrawing the apparatus.”

“ To vitrify these panes, they may be submitted to a high
“ temperature, so as to volatilize the albumine or collodion; the
“ silver (reduced) will penetrate into the glass (liquified on its
“ surface), leaving thereon a scarcely visible design or image of a
“ dirty yellow color. To turn this into ‘bistre,’ it is necessary to
“ combine therewith that which is obtained by the vitrification of
“ colcothar or oxide of iron, and for this purpose the employment
“ of protosulphate of iron will be found most serviceable as a
“ means of developing the image or design, as the oxide of iron
“ and silver and a small quantity of sulphur of silver, which are
“ formed during the vitrification, gives to the proof a sufficient
“ strength of color.”

[Printed, 3d.]

A.D. 1855, July 13.—N° 1581.

GAUDIN, PIERRE IGNACE ALEXIS.—(*Provisional Protection only.*) The title of the invention is, “Improvements in baths
“ used for photographic purposes.”

The inventor further states:—“My improvements in baths
“ used for photographic purposes relates to baths of nitrate of
“ silver or collodion, into which the paper or glass is immersed
“ previous to receiving the photographic impression, and consists
“ in maintaining and the means of maintaining the bath at a
“ proper temperature for the purpose. To effect this I surround
“ the bath with a double casing of metal or other suitable
“ material, into which I place a freezing mixture or other cooling
“ material, in order to cool and reduce the bath to the proper
“ temperature when it is naturally too warm for the purpose;
“ and on the other hand, when too cold by reason of the natural
“ coldness of the surrounding atmosphere, I place warm water
“ within the double external casing of the bath, in order to raise
“ the temperature to the required degree.”

[Printed, 3d.]

A.D. 1855, August 11.—N° 1824.

PRETSCH, PAUL.—This invention relates to “obtaining cylin-
“ drical and other engraved and ornamented surfaces” “by

"photographic and other agency," and refers to further improvements in the application of the processes set forth in N° 2373, A.D. 1854, (which see).

Copper or other suitable plates are engraved by the processes set forth in N° 2373 (A.D. 1854), and are employed "for the formation of cylinders to be employed in calico and similar printing, embossing, or other purposes; or cylinders may be formed directly by the electrotype process by means of suitable tubular or other arrangements" of the engraved plates, "to serve as moulds, and the cylinders produced therefrom may be strengthened by the insertion of metal rollers, cast metal, and similar methods.

"When it is desired to ornament manufactured articles with engraving," according to this improved process, "the same can be variously applied to flat, curved, and other surfaces, and when required the engraved surfaces may be covered with gold, silver, or other metals or materials, or may be inlaid with metals or other materials."

[Printed, &c.]

A.D. 1855, August 14.—N° 1842.

SHEARS, GEORGE.—"An improved construction of stereoscope."

This invention "has for its object to construct these instruments in such a manner as will admit of their being folded up and packed away in a shallow box when not in use." Each side is in two pieces, connected together "by a butt hinge" and "a vulcanized india-rubber spring," "in such a manner, that when the stereoscope is opened these springs will retain the parts in position, but will yield to pressure, and allow the parts to fold the one over the other when it is required to close the instrument. The cross piece at top which carries the lenses is jointed by hinges to the folding sides, and these sides are hinged to the side or bottom of the stereoscope box." All unnecessary light may be shaded from the picture under inspection by connecting the side pieces by cloth or other flexible material. "For the purpose of exhibiting transparent pictures, the bottom of the stereoscope box may be formed of glass, or this bottom may be made to consist merely of a hollow frame and covered with an

“ opaque door, which may be removed or folded back when the light is required to be introduced to the back of the picture. The lid of the box will assist in forming with the flexible material before mentioned a dark chamber for the reception of the transparent picture.” The “ shallow box ” itself forms the bottom of the instrument, and is attached to the lid by a leathern joint or hinge ; when not in use, the instrument is compressed within the box, and the lid is closed by hooks and eyes.

[Printed, 7d.]

A.D. 1855, August 24.—Nº 1914.

ARCHER, FREDERICK SCOTT.—This invention relates to “ the manufacture or production of transparent or semi-transparent tough and flexible photographic pictures, capable of being used for the production of other or positive pictures by coating, or covering, or combining a collodion film with a film of gutta percha, and removing the combined films from the glass or other surface which supports the collodion during the operation of taking the picture.”

“ The negative picture is produced in the ordinary manner upon the collodion film on a sheet of glass, and it is fixed and dried in the ordinary manner.” The picture is then treated with a solution of gutta percha in benzole, either by pouring the solution over the plate or dipping it (the plate) into the solution ; “ after draining off the excess of the solution,” the plate “ is dried by a gentle heat, and leaves a nearly transparent film of gutta percha upon the collodion. If the film is not sufficiently thick, this operation is repeated one or more times, until a sufficiently thick film of gutta percha is formed.” The whole is then immersed in water, “ which causes the collodion to separate from the glass,” and “ the film or sheet of gutta percha with the collodion film firmly adhering or combined with it,” is removed.

The glass plate may be first coated with a film of gutta percha, then with a collodion film, and when the picture is produced and fixed, with another film of gutta-percha ; on removing these films from the glass plate, a collodion film coated on both sides with gutta percha, is obtained. Instead of using the second film of gutta percha, the picture may be simply varnished with any suitable varnish.

[Printed, 3d.]

A.D. 1855, September 19.—N° 2112.

CORNIDES, LOUIS.—This invention is entitled "Certain improvements in obtaining impressions of prints or drawings, and in transferring printing, and colouring or ornamenting the same on glass or other surfaces;" one of these improvements relates to an application of photographic processes. The improvements are:—

1st. A method of transferring "lithographic or other impressions" on to a surface of glass, coated with "gelatine or animal glue." After the impression is transferred, it is "fixed" by means of "a solution of any of the known salts of alumina."

2nd.—"Coloring the gelatined surface of glass with or without printing or transferring impressions thereon after the same has been steeped in the before-mentioned fixing bath." "Negative impressions" are transferred to the coated glass surface, and coloured so as to produce a positive picture by transmitted light.

3rd.—The use of finely pulverized coloured glass applied to the coated surface of glass by means of stencil plates.

4th.—"The use of the gelatined glass surface for the purpose of making photographic impressions." Positive impressions are obtained from photographic negatives on the gelatine surface, which is sensitized for the purpose. The positive picture thus produced is subjected to the action of the fixing bath mentioned in the 1st improvement; it may also be subjected to the "coloring or coating processes mentioned in this Patent."

5th.—Colouring the transferred impression by means of a coat of fine metallic powder, and transferring the same to the gelatined surface.

6th.—Protecting the printed or coloured surface of gelatine by means of a "solution of explosive cotton in pyroxylic spirit, combined with gums or resins."

Nos. 2066 (A.D. 1854), and 745 (A.D. 1855), are referred to in the description of this invention.

[Printed, 4d.]

A.D. 1855, September 25.—N° 2139.

CLIVE, JOSEPH CHARLES.—(*Provisional Protection only.*) This invention "relates principally to such photographic pictures as are taken upon glass, and are called collodion positives;" its

object is "the production of 'backgrounds' to portraits and " groups, which said 'backgrounds' shall be well defined."

The inventor further states :—" My invention consists in taking " the portrait or group on one side of a sheet of glass, and after " having removed from the glass the whole of the background, I " take upon the other side of the sheet of glass any scene which I " wish to be the background, or I take the said background on a " second sheet of glass, and place the same at the back of the " first. The pictures are thus superposed, the portrait or group " being uppermost, and the picture constituting the background " undermost."

" By the method described, figures or objects taken at different " times and at different places can be brought into one picture."

[Printed, 3d.]

A.D. 1855, October 24.—N° 2381.

MAYALL, JOHN EDWIN.—This invention relates to the application and use of artificial ivory, " for receiving the photographic " pictures, as a substitute for the metal or glass plates, or photographic paper ordinarily employed for that purpose," such material " having all the properties and beautiful finish of ivory."

The methods of making artificial ivory for photographic purposes are as follows :—

1st method.—Tablets or slabs composed of gelatine or glue in its natural state "are immersed in a bath of alumina, which is " held in solution by sulphuric or acetic acid ;" " a complete " combination takes place between the alumina and the gelatine " or glue." The tablets remain in the bath until they are sufficiently thick ; they are then removed, allowed to dry or harden, and dressed and polished by any known process. The material thus produced is "known in France as Pinson's artificial ivory."

2nd method.—Alumina may be mixed directly with gelatine or glue, and sheets manufactured therefrom.

3rd method.—Equal portions of bone or ivory dust and albumen or gelatine are worked into a paste, and afterwards rolled out into sheets. The sheets are then allowed to harden, "and " are cut into slabs or tablets of the required size."

4th method.—Finely powdered baryta and albumen are "well

“ worked together, and rolled out into slabs.” Preference is given to this method.

The slabs produced by either of the above means are “ carefully scraped, to give them a perfectly even surface,” washed with alcohol, and prepared in the ordinary way to receive positive pictures. “ The pictures having been printed, the entire slab ” is immersed in weak nitro-sulphuric or nitro-hydrochloric acid, fixed, and dried under pressure on a marble slab.

[Printed, 3d.]

A.D. 1855, November 13.—N^o 2555.

MAWSON, JOHN.—(*Provisional Protection only.*) “ Improve-
ments in cameras for taking photographic pictures.”

The inventor states :—“ My improvements in cameras consist
“ in forming them in such a manner that they are capable of
“ being closed up so as to occupy less space than ordinary, and
“ also in so arranging the front of the camera, or bracket carrying
“ the lens, that a readier method is afforded for focussing or
“ setting the instrument. I also place at the back of the camera
“ a shutter or screen, which serves as a permanent focussing cloth,
“ which, when not in use, folds down and fits into the body of
“ the camera. I form the body part of my improved camera of
“ cloth, the ordinary grooves for the reception of the focussing
“ glass and dark chamber being made in the framework of the
“ camera. In front of the body of the camera I place a conical
“ tube of pliant or flexible cloth. This tube is connected to the
“ back of the bracket carrying the lens by means of an elastic
“ neck, which fits into a deep groove in the bracket. The bracket
“ carrying the lens is fixed to a slide, which fits into a groove or
“ sheath in the framework of the camera, and is pushed out or
“ drawn in by a regulating screw. The sheath or base of the
“ camera is fitted with a slotted plate, by means of which the
“ main frame of the camera may be turned square upon the
“ base, or otherwise adjusted without detachment therefrom.
“ Where it is desired to render the camera more portable I dis-
“ pense with the ordinary tubing or casing of the lens, and fix
“ the lens permanently in the bracket before mentioned, and
“ attach in the front thereof a flexible tube, fitted with a coiled

“ spring, which can be drawn out to any required extent, and
 “ when not in use fits flat against the bracket, thereby also serving
 “ ing as a covering or protection to the lens.”

[Printed, 3*d*.]

A.D. 1855, November 14.—N° 2573.

MÖLLER, JOHANNES.—(*Provisional Protection only.*) The title of this invention is, “ Producing a transparent photographic picture on ivory without injuring the nature of the ivory, so as to
 “ be able to finish the picture with colours like other miniatures.”

This invention “ consists in producing a transparent positive photographic picture, and bringing or transferring the same
 “ upon ivory by means of a gelatine or glass medium, which
 “ leaves the ivory free from all injury, and will enable the artist
 “ thus to finish the picture so brought or transferred on ivory
 “ with colours like other miniatures prepared on ivory.”

[Printed, 3*d*.]

A.D. 1855, December 12.—N° 2808.

HAY, GEORGE HERON, and HAY, DAVID SYME.—This invention relates to colouring photographic pictures; it consists in applying amber or other clear varnish to the collodion film, and, when this first coating is dry, applying a secondary coat of drying oil and varnish on which the colours are laid whilst the drying varnish is still moist. “ The colours may be applied either in the
 “ form of ordinary oil paint, or in the dry condition.”

According to another process “ the colours may be applied without the previous application of the medium or secondary
 “ coating, in which case of course oil or other moist colours only
 “ are to be used.

“ The backgrounds and other portions of the picture may be
 “ finished up in any desired style, and the colouring matter is
 “ then coated with a varnish or protective cover. This system of
 “ treatment is obviously applicable to collodion and other photographs of various kinds, and it renders such pictures extremely
 “ durable and unliable to injury or decay.”

[Printed, 3*d*.]

A.D. 1855, December 13.—N° 2815.

POITEVIN, ALPHONSE LOUIS.—The title of this invention is, "Improved photographic printing."

A mixture is made, consisting of "a concentrated solution of albumen, fibrine, gum arabic, gelatine, or similar organic substance, and a concentrated solution of a chromate or bichromate of potash, or of any base which does not precipitate the organic matter of the first solution." This mixture is applied "upon the surface which is to receive the design," so as to form a layer or film; the layer is used dry when the picture is impressed by contact, and moist when used in the camera. When the picture is impressed, if the surface is not moist enough, it must be moistened and a "greasy ink" applied to it; the ink "will be found to adhere to those parts only which have been affected by the light," and the print thus obtained "may be retained on the surface on which it is first produced," or impressions may be taken from it in the manner of lithographic printing. Lithographic stone, metal, glass, wood, or other suitable material may be used to receive the photographic image.

A design is produced in colour by mixing a suitable colour with the above-mentioned organic mixture, and, when the photograph is impressed, washing away those portions of the mixture which have not been acted upon by the light. A design in various colours may be produced by suitably applying different colours to different parts of the surface.

[Printed, 3d.]

A.D. 1855, December 13.—N° 2816.

POITEVIN, ALPHONSE LOUIS.—The title of this invention is, "Improved photographic engraving."

A glass or other surface is covered with a layer of "chromatized gelatine," either by pouring on a uniform layer of gelatine and plunging the whole into a concentrated solution of bichromate of potash, or by using the gelatine and bichromate mixed to pour on to the glass plate. The plate being thus sensitized the image is impressed and the plate plunged into water; "the parts which have not been acted upon by the light absorb the water and swell or expand, while the parts which have been acted upon

“ by the light only become slightly moistened, and thus form hollows.”

A plaster cast of the plate whose hollows thus correspond to the lights is taken by pouring a solution of protosulphate of iron upon it, then washing it, and pouring the plaster upon it, a suitable frame having been fitted to it; when the plaster has set it is carefully removed. The protosulphate of iron gives consistence and strength to the plaster, so that it may be successfully removed from the film of gelatine.

The surface of gelatine is metallized for yielding an electrotype mould by the following process :—Immediately after exposure to light it is immersed in a solution of iodide of potassium, then in a solution of nitrate of silver. The whole surface is then exposed to light, and, ultimately, the silver is completely reduced by a solution of protosulphate of iron.

The engraved plates that may be produced from these moulds are adapted for printing and embossing, also for moulds for earthenware, &c.

[Printed, 4d.]

1856.

A.D. 1856, March 18.—N^o 646.

MAW, ARTHUR.—(*Provisional Protection refused.*) “ Improved means of ornamenting the surfaces of woven, knitted, or felted fabrics, such as cloths, stuffs, ribbons, and other fabrics; or of parchment, vellum, leather, or other animal tissues, and rendering such fabrics or tissues applicable to various purposes.”

This invention “ consists in the employment of certain processes, closely allied to the process of photography, and whereby the surfaces of these materials may be rendered sensitive to light, so that, having obtained a negative picture on glass or paper, or some other transparent or translucent material, a positive impression or image may be transferred to the prepared surface of the fabric or tissue. By these means any variety of design or pattern may be transferred to these materials; but the particular nature of the design or pattern must depend not only upon

“ the taste of the operator, but also upon the purpose for which
“ the ornamented materials are to be employed.

“ It will be clearly understood, from the foregoing, that the
“ invention admits of an infinite variety of applications ; for in-
“ stance, it may be successfully applied to ornamenting various
“ articles of dress, and also for ornamenting books, both exter-
“ nally and internally, as well as various articles of furniture, and
“ to other purposes too numerous to mention.”

[Printed, &c.]

A.D. 1856, April 12.—N° 875.

SCHULTZ, LUDWIG.—(*Provisional Protection only.*) The title
of this invention is, “ Improvements in obtaining photographic
“ pictures upon paper, glass, metal plates, and other fibrous
“ substances.”

The inventor states :—“ The invention consists in preparing
“ my paper or other fibrous substances which I intend to use for
“ obtaining photographic pictures upon, by first coating them
“ over with a suitable varnish, preferably of a dark color, so as
“ to give them a smooth surface, and at the same time to prevent
“ them from being injuriously acted upon when immersed in the
“ liquids for subsequent preparation. I apply in like manner the
“ same varnish to glass or other metal plates, for the purpose of
“ giving them a proper smooth surface to receive the picture
“ upon.”

[Printed, &c.]

A.D. 1856, April 15.—N° 896.

OLLEY, WILLIAM HENRY.—(*Provisional Protection only.*) The
title of this invention is, “ Taking photographic impressions or
“ pictures of microscopic objects by reflection, such reflection
“ being effected by the combined aid of the microscope and
“ camera obscura and camera lucida, or other reflectors that may
“ be employed in place of the latter.”

“ The four-sided reflecting glass prism, commonly known as the
“ camera lucida,” is fitted “ on the eye piece of the microscope,
“ the cap by which it (the eye piece) is usually surmounted being
“ previously removed, and the body or tube of the instrument
“ brought into a horizontal position ;” an inverted camera obscura

"or darkened box" is then placed over the said prism. The camera fits closely to the tube of the microscope, and has a second box open at the lower end sliding within it that carries the plate frame; the image of an object properly placed at the object end of the microscope formed by reflection from the camera lucida can thus be correctly focussed on to a ground glass plate, temporarily substituted in the usual manner for the sensitive plate. The picture is then taken, developed, and fixed in the ordinary way.

"The invention is applicable to the obtaining microscopic impressions, by reflection, by the use of iodized silver plates, and every modification of the daguerreotype process, albumenized photographic glass plates, calotype paper, and all other papers or surfaces impressionable by light."

Plate glass or other reflectors may be used instead of the camera lucida.

[Printed, &c.]

A.D. 1856, May 8.—N° 1078.

MAYER, LOUIS FRÉDÉRIC.—(*Provisional Protection only.*) This invention "consists in substituting linen and other woven fabrics for the ordinary materials, on the surface of which photographic images are deposited or printed.

"The surface of the said woven fabrics is prepared in the ordinary manner in which the surface of paper and other materials have been hitherto prepared, so as to render it susceptible of receiving an image by means of the photographic process; and the process is carried on in the usual manner, except that the chemical ingredients in ordinary use for the purpose are varied in their proportions, so as to adapt the process to the particular nature or character of the fabric."

[Printed, &c.]

A.D. 1856, May 13.—N° 1123.

PARKES, ALEXANDER.—(*Provisional Protection only.*) The title of this invention is, "Improvements in the use of collodion in photography."

The inventor states:—"Heretofore in taking photographic pictures by what is known as the collodion process, a sheet of

“ glass has been used to support the film of prepared collodion. Now this invention consists in substituting for this sheet of glass a sheet of collodion, of sufficient thickness to support the prepared film; or a thick layer of collodion may be first formed on the glass, and on this layer the film of prepared collodion may be produced, and the picture taken thereon and suitably varnished or protected, afterwards the whole may be stripped from the glass together. And when making positive pictures by either of these processes, I coat the back of the collodion plate which supports the picture with a black flexible varnish, or the plate of collodion which supports the picture may be of a black color.”

[Printed, 3d.]

A.D. 1856, May 16.—N^o 1159.

THISTLETHWAITE, WILLIAM (*a communication from Louis Angamarre*).—“This invention consists in producing and fixing photographic pictures upon all kinds of fabrics and materials.”

A very thick preparation of collodion is made, “consisting of sulphuric ether, alcohol, gun cotton, and iodide of ammoniac;” “to make the collodion more sensible,” certain proportions of alcohol, “iodide of ammoniac, bromide of ammoniac, and chloride of ammoniac,” are mixed with it (the “chloride of ammoniac” is not mentioned in the Complete Specification). This composition is termed “the pedicle,” and is poured upon glass and then plunged into a solution of nitrate of silver. When the photographic image is impressed, the negative picture is obtained by introducing the plate “into a bath composed of distilled water, protosulphate of iron, acetic acid crystallized, and sulphuric acid;” the positive picture is fixed by plunging the plate into a solution of cyanide of potassium. “The proof is then dried, and the pedicle may be separated from the glass with a piece of blotting paper and placed upon the necessary material, and passed under a roller or rollers so as to well fix it upon the material; and after the blotting paper is removed, spirits of wine (of 60 degrees centigrade) is poured upon the likeness or image to give it the required tone and brilliancy.”

The following is a mode of separating the “pedicle” that does not invert the picture:—The “pedicle” is made to float upon the

top of the glass, by plunging it (the glass) into a weak solution of hydrochloric acid; the "pedicle" is then transferred and finished by laying the glass down on a flat surface, placing the material upon it, taking up the whole, so that the glass is uppermost, pressing "the fabric underneath it with the fingers, to force "out all air bubbles," removing the fabric and "pedicle" from the glass, pouring water over it and drying the picture. The surface is then moistened and cleansed from all imperfections by rubbing. The picture may then be coloured in the usual manner. "This last mode of removing the pedicle from the glass" is preferred.

[Printed, 3d.]

A.D. 1856, May 21.—N° 1201.

DUFRESNE, ALEXANDRE HENRI.—"An improved process of "gilding and ornamenting steel and other metals," in which photography is used to produce "reserves."

This invention consists in :—

1st. "The employment of one or several intermediate metals, "deposited either by chemical, electro-chemical, or mechanical "processes, on the metal to be gilded, silvered, or ornamented."

2nd. "The manual or mechanical application of a protecting "matter, such as varnish, bitumen of Judea, printers' ink, &c., "upon the intermediate metals to form the reserves to be gilded, "silvered, or ornamented, such reserves being produced by photo- "graphic means, or by a general coating sensible to light, such "as bitumen of Judea." The ordinary processes of photography may be employed "either directly or by transfer on the surface to "be gilded, silvered, or ornamented."

3rd. "The destruction of the intermediate unreserved metals, "by baths of different kinds," "for the production of flat and "relievo designs."

4th. "The removal of the protecting matters which have served "to preserve the surfaces operated on."

5th. "Gilding or silvering the surfaces by means of mercury, "according to the ordinary processes of gilding and silvering by "amalgamation, and finally the volatilization of the mercury "by heat."

Methods of operating on iron, steel, "platina," and silver, according to the processes comprised in this invention are given at length.

[Printed, 3d.]

A.D. 1856, May 24.—N° 1245.

JUNDZILL, ADAM DUNIN.—(*Provisional Protection only.*) The title of this invention is, "An instrument for animating " stereoscopic figures."

The inventor states:—"This invention, for which I request a " patent, is an application of the stereoscope to the apparatus well " known under the name of phanakistiscope" [phenakistiscope?] " or sobroscop, invented by Plateau; the last shews the figures in " motion. My apparatus makes the figures which stand out by " the stereoscope to be seen in motion; this is its description:—

"Two round cartoons, with figures of phanakistiscope set in " the same manner and symetrically, are put in motion by means " of a crank which gives them a speed perfectly identical. A " small pasteboard wheel, bored on the edge, is put in motion by " the same crank in such a manner that its speed be the same as " that of the aforesaid two cartoons with figures. Two stereo- " scope glasses are set into their frames forward the bored wheel, " and are placed in such a manner that both eyes may see the " two figures reflected in a looking glass which is set before the " apparatus. Therefore, when any one intends to use the appa- " ratus, he will begin by setting it at such a distance from the " looking glass that the figures motionless be confounded, and " stand out as in the stereoscope. Then the crank will be put in " motion. The two cartoons with figures being identical, and " their speed being the same, it is obvious that their effect will be " the same as in the phanakistiscope, and therefore the figures " will be seen in natural motion."

This apparatus is called the "*kinimoscope*."

Any of the ordinary means can be used to put "the cartoons" in motion.

[Printed, 3d.]

A.D. 1856, May 31.—N° 1295.

FOWKE, FRANCIS.—(*Provisional Protection only.*) "An im- " proved portable photographic camera."

No. 20.

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This "improvement consists in certain mechanical arrangements, by means of which the frame of the photographic camera can be brought to lie close together, and packed in the least possible space.

"The bottom which has usually been employed, is partly dispensed with, by constructing the front part of the camera in the form of a four sided cone, made of wood, each side hinged, and differing sufficiently in length to fold down flat one over the other, so as to be enclosed in a shallow frame. This peculiar arrangement of the front part has the advantage of giving it sufficient rigidity to sustain itself."

[Printed, 3d.]

A.D. 1856, June 5.—N° 1344.

DALLAS, DUNCAN CAMPBELL.—(*Provisional Protection only.*) The title of this invention is, "Improvements in chemical preparations applicable to the photographic and photo-galvanographic processes."

The inventor states:—"The peculiarity of my said invention consists in the employment of chromic acid, either alone or in combination with photographic or other materials, as hereafter mentioned.

"I put a solution of chromic acid to a solution of gelatine; or with the solution of chromic acid I mix a solution of iodide of potassium, & add them to one of gelatine; or the solution of chromic acid may be mixed with one of nitrate of silver, and be added to one of gelatine; or, if required, all the four solutions may be combined."

[Printed, 3d.]

A.D. 1856, June 10.—N° 1373.

SKAIFE, THOMAS.—This invention is entitled "Spring-folding camera shutters, for the more speedy and convenient mode of taking photographic pictures than has been hitherto adopted."

The invention consists:—

1st. In substituting for the ordinary dark slide of the camera, a pair of folding shutters. These shutters are fixed on vertical spindles attached to the plate frame; each spindle carries at its upper end a drum, and an india-rubber elastic band and cord are

so arranged round the drums that, upon a ring being drawn parallel to the optical axis of the camera, the band stretches and rotates the drums, thence opening the shutters. Upon the ring being let loose the reaction of the India-rubber spring closes the shutters. When the shutters are large, other springs are applied, so as to prevent them opening when out of the camera.

2nd. In adapting a similar arrangement to that of the 1st part of the invention, to the camera itself, immediately behind the lens. The cord from this second pair of shutters may be attached by a hook to the ring of the larger shutters above mentioned, and thus both pair of shutters opened at once, or they may act independently of the frame shutters. "The object of this second pair of shutters is to keep the lens covered until the first pair is at least three quarters opened."

When an instantaneous picture is required, a steel plate with a circular aperture is used instead of the second pair of shutters. To allow the aperture to be suddenly and momentarily projected behind the lens, a thread attached to the steel slide is acted on by an India-rubber tube. A bolt of steel or "trigger" retains the opaque part of the slide behind the lens until the picture is required to be taken. When the "trigger" is pressed, the slide is immediately projected behind the lens, thus instantly admitting and shutting off the light in consequence of the India-rubber tube being free to act. A magnet may be placed so as to accelerate the movement of the slide.

[Printed, 7d.]

A.D. 1856, July 12.—N^o 1651.

AVERY, JOHN (*a communication from Madame Millot*).—"An improved 'plate-holder' for photographic and other purposes."

The Specification and Drawings describe and show an apparatus possessing the general appearance and many of the characteristics of an ordinary pistol. The part corresponding to the barrel is a "rod of wood or other suitable material" fixed to the stock or handle, over which "rod" a moveable tube or "hollow rod" fits. "Both rods are provided with jaws or clamps" "cut aslant or hollowed on the parts opposite to each other." By sliding the "hollow rod" upon the other, the jaws can be set at any distance apart to suit plates of various sizes. The jaw upon the "move-

"able rod" is fixed; that upon the stock slides in a groove and is provided with a suitable spring and trigger.

The trigger being fixed to the jaw on the stock, by pressing the trigger, the action of the spring is neutralized, and the plate can either be fixed in the apparatus or removed therefrom. When a plate is required to be coated with a thin layer of collodion or solution, this apparatus enables the operation to be performed easily and readily, owing to the freedom of motion permitted by the position of the handle.

When large plates are to be operated upon, a metal point at the end of the "moveable rod," "stuck either in the wall or a door," gives the necessary support to the plate.

The spring attached to the moveable jaw may be of caoutchouc, or a magnet may be used instead of a spring.

[Printed, 10d.]

A.D. 1856, July 26.—N° 1782.

COOKE, GEORGE COLLETON. — "Improvements in stereoscopes."

This invention consists:—

1st. In "the application to stereoscopes of conical, "or pyramidal, or trumpet-mouth tubes for the eye pieces, in place of "the ordinary cylindrical tubes usually employed for this purpose."

2nd. In "the adaptation to the eye pieces of stereoscopes of "additional moveable lenses of various kinds." "These lenses "may be colored or plain," and "are moved into and out of "use by means of small levers projecting through the sides of "the box;" "colored glasses may be adapted to the instrument "in a somewhat similar manner." When it is desired to magnify the picture, the additional lenses should be placed about half way between the picture and the eye pieces. If magnifying lenses of short focal distance are placed immediately under the ordinary lenses, the picture is placed on a shelf about midway between the bottom of the box and the eye pieces.

3rd. In "the adaptation to stereoscopes, immediately above the "space occupied by the picture, of a double 'passe-partout,' or "*frame*, for the purpose of preserving uniformity of size in the

“ pictures, as well as to prevent any light from being reflected
“ from their margin and confusing the eye.”

[Printed, 10*l*.]

A.D. 1856, August 19.—N^o 1935.

SUTTON, EDWIN.—(*Provisional Protection only*.) The inventor states :—“ My invention of an improved ‘ construction of stereo-
“ ‘ scope,’ has for its object, firstly, the constructing and so com-
“ bining the various parts of which the stereoscope is commonly
“ composed, that it may be easily compressed into a small case,
“ & thereby rendered more conveniently portable than the usual
“ rigid form stereoscope.

“ Secondly, it is made to possess all the advantages of the
“ most improved rigid stereoscope by the construction & appli-
“ cation of entirely newly formed hinges & spring. These
“ hinges I fix to the bottom of the folding ends that support the
“ top that carries the lenses or eye pieces. The centre pivots or
“ axles of the hinges I make so as to work in holes in the sides
“ of the case, into which the instrument is compressed; upon
“ these axles I fix a piece of metal with angular hinges. I also
“ attach to the inside of the case a flat steel spring, made in such
“ a manner as to be always kept in tension by the angular edges
“ of one hinge at each end, and as the flat edge of the spring
“ presses against the hinges, it will always have a tendency to find
“ a flat baring, & consequently will firmly keep the parts of
“ the instrument in position when in use & at rest.”

[Printed, 3*l*.]

A.D. 1856, August 23.—N^o 1965.

BENOIST, PHILIPPE.—(*Provisional Protection only*.) “ An im-
“ provement in the construction of stereoscopes.”

“ This invention is to combine the effects of the ‘ fenakistoscope ’ ”
[phenakistoscope?] “ and the stereoscope; the former gives move-
“ ment to the figures, but no relief; the latter relief, but no move-
“ ment. The animated stereoscope unites the two results in one
“ instrument. The ‘ animated stereoscope ’ is contained in a box
“ scarcely larger than the ordinary stereoscope, but in doubling the
“ pictures of the stereoscope it preserves the relief of that instru-
“ ment, and adds the movements of the ‘ fenakistoscope.’ The

“ figures in the animated stereoscope are, as in the two instruments above mentioned, obtained in the desired position, and they are seen alternately without visible displacement in the substitution. To obtain this effect they are placed one upon the other, so that they may be seen alternately, the one without the other, by the following means:—The two stereoscopic pictures are placed at right angles, the plain of the one being perpendicular to the plain of the other. A grooved glass cuts the angle in two, and consequently places an angle of forty-five degrees between the glass and each figure. The motion which is given to the glass by a spring at the side of the instrument displaces it without altering its inclination, so as not to change the angles which it makes with each picture. As the glass is only transparent in those parts necessary to obtain the desired effect, it shews alternately the two figures, the one by reflection, the other by refraction.”

[Printed, 3*d*.]

A.D. 1856, August 26.—N^o 1983.

PERRY, JOHN.—This invention relates to the obtainment of photographic positive pictures from negatives previously obtained on glass or other suitable material, the said positive pictures being “absolutely permanent and insensible to the action of solar light.”

The paper to be used is floated on a solution of chromate of ammonium or bi-chromate of potash, dried, impressed with a positive picture, washed, dipped in a solution of protosulphate of iron, washed again, and treated with a solution of gallic or pyrogalllic acid or of tannin.

In this process other combinations of chromium may be employed, and if chromate of iron is used, the picture is ready for the application of the gallic acid, without the use of any other salt of chromic acid or of iron, thus simplifying the process.

Soluble salts of silver, tin, lead, zinc, cadmium, antimony, nickel, or bismuth, with or without ammonia, may be used, “previous to the application of the chromium,” to produce depth of colour.

Instead of using protosulphate of iron to develop the picture, other salts of iron may be used for that purpose, and the salts of *silver, copper, tin, lead, zinc, cadmium, antimony, nickel, or*

bismuth may be employed at the same stage of the process. The salt of iron may be employed, combined with ammonia, without the chromium, but in conjunction with the subsequent use of gallic acid.

To produce colour and improve the general effect, cyanogen and other analogous articles may be applied in the same manner as the gallic acid.

If paper is used for this invention, its surface may be prepared with gelatine prior to other treatment.

[Printed, 4d.]

A.D. 1856, September 1.—N° 2029.

NORRIS, RICHARD HILL.—“Certain improvements in photography by the use of collodion in a dry condition, and for a means of transferring photographic films.”

Under ordinary circumstances, the sensitiveness and porosity of collodion films are destroyed by dessication, but by the following process pictures may be produced “on perfectly *dry* and hard collodion films:—Having produced in the film the sensitive iodide of silver,” the film is immersed “in a solution of gum arabic, or of dextrine, starch, gelatine, albumen, gum tragacanth, vegetable mucilages, caseine, gluten, or other such like substances,” that will by “occupying the pores of the collodion film, prevent its condensation on drying, and retain it in a sensitive and pervious state;” “the films are then dried and are ready for exposure to light, or may be kept for any convenient length of time and used as desired.”

To transfer photographic films from glass plates to elastic plates of gelatine, the following process is used:—“A strong solution of gelatine is poured over the film and permitted to dry; when dry it is coated with plain collodion, and may be readily stripped from the glass, and then possesses the advantages of elasticity, compactness, lightness, and freedom from breakage. This mode of transfer is applicable to photographic films in general.”

[Printed, 3d.]

A.D. 1856, September 5.—N° 2064.

DANCER, JOHN BENJAMIN.—“Improvements in photographic cameras, and in the apparatus connected therewith.”

1st. To adjust the focus of binocular stereoscopic cameras, a rack or chain movement is used; one extremity of the rack or chain is fixed to the camera box, the other to the sliding piece carrying the lenses. When a chain is used, a fluted spindle terminated by an exterior milled head, produces the necessary motion; and if a rack is employed, it is worked by means of a pinion.

2nd. The application of a fixed or permanent level "to cameras in general." The Drawings show an ordinary spirit level mounted on the top of the camera box.

3rd. "The use of revolving or sliding diaphragms or plates pierced with apertures of various areas, which may at pleasure be brought into use." The lenses are attached to the front of the camera by flanges, and project into the camera; the flanges carry the perforated discs by means of centre pins. The discs are turned upon the centre pins until the required apertures are opposite those of the flanges, and are held in the required position by means of springs fixed to the camera box, which take into indentations on the discs. To shut off the light from the lenses of binocular cameras, a plate is mounted upon a centre pin situated between the two lenses; by the turning of the plate the two apertures are closed at the same time.

4th. "A method of altering the level of the lenses of binocular cameras." The lenses are mounted upon a piece capable of sliding in vertical guides; to this piece is attached a central nut, within which is a vertical screw; by turning the milled head of the screw the lenses may be raised or lowered as required.

5th. Apparatus whereby "a number of prepared plates or other sensitive surfaces" may be successively exposed to light, without the aid of a dark room or other similar contrivance. According to one method, the camera box is supported on the top of a box, within which slides another box containing the sensitive plates, separated by suitable compartments. The plates are mounted in frames, which are (by rack and pinion motion) successively brought under an aperture in the camera box; a rod, situated in or near the focal plane of the lenses, is moveable vertically, so as to raise the plates through the said aperture into the proper position in the camera for receiving the image. When a plate has had the image impressed upon it, it is restored to the dark box by depressing the rod; the rod is then detached

from the plate, the box moved so that the next compartment is under the aperture, and another plate impressed and restored to the box in like manner. The lid of the plate box is kept away from the aperture in the camera box by a screw, which is undone, to allow the lid to be closed, when the box of impressed plates is removed from the camera.

The box may be on either side or at the top of the camera, instead of underneath. According to another modification, the box may be stationary, and the vertical rod moveable to the places of the respective plates. The plate box may be detached from the camera, and the dark frame may be adjustable to it, so as to take out or restore a plate without exposing the said plate to light; for this purpose the lid of the box is made more than double the length of the box, with an aperture in the middle, and a hinged shutter prevents the light from entering the dark frame.

[Printed, 11d.]

A.D. 1856, September 5.—N° 2072.

JOHNSTON, JOHN.—"Improvements in photographic plates."

This invention "consists in substituting in lieu of plates of glass, as commonly employed for taking photographic portraits upon, thin plates of metal, for example, sheet iron, one side or surface of which is coated with black japan, such said japanned surface being intended to receive the collodion coating, in the manner usually practised of coating plates of glass; the said japanned metal plates possessing this advantage, that whereas for positive pictures on glass the back of the picture requires to be covered with black varnish to throw up the shadows, by this invention, when the image or picture is developed the japan background is at once exposed to view; moreover, the aforesaid metal plates may be afterwards easily cut to any desired shape."

[Printed, 3d.]

A.D. 1856, September 8.—N° 2092.

SABATIER, BONIFACE.—This invention relates to the instruments used in photographic manipulations.

This invention consists in making the plates used for photographic purposes with "tenons," for holding them in the various operations they undergo. The Drawings show a glass plate to which

these "tenons" are adapted, either by being cut originally in that shape by means of a diamond, by casting, or by affixing by means of marine glue; the "tenon" is represented as a square projection in the middle of each of the shortest sides of the rectangular plate. This tenoned plate is fitted for application to the various instruments by a strip of glass, (the width of the tenons, and rather longer than the total width of the plate and tenons,) which is affixed to the back of the plate (by means of silver wedges) so not to touch any part of the plate itself.

To clean the glass plates.—For the rough cleaning a Baron Gros' instrument is used, to the ends of the plate of which are attached "metal tenons" and clamp screws. When manipulating, the plate of this instrument is attached to a table by a clamp and screw. For giving the finishing polish to the glass, an instrument is employed consisting of two cheeks, one of which slides in a dovetailed groove attached to the other, and is made to clamp the piece of glass at the back of the plate by means of a screw. The tops of the cheeks are flat, to serve "as a table for the tenoned glass plate to rest upon."

A plate frame fitting into an ordinary camera is described and shown, having recesses for the reception of the tenons of the glass plate. The back of this frame has a recess for the reception of the strip of glass at the back of the plate, and is fastened to the frame by means of hooks and eyes.

An instrument for holding the strip of glass whilst the plate is being detached therefrom, consists of a stand having fork-shaped pieces projecting upwards that carry recesses and wires for that purpose.

An instrument for holding the glass plate whilst developing the image, consists of a slide provided with a handle underneath and carrying a fixed and moveable cheek. By suitably placing and fixing the moveable cheek the glass can be securely held.

A glass bath for containing the sensitizing solution is adapted for use in connection with the tenoned plates, by having two projections from the bottom of the bath on which the tenons rest. The solution should not be higher than the top of these projections.

In a pressure frame adapted to the tenoned plates, a frame with recesses for the tenons and an India-rubber strip placed round the

edge for the plate to rest on, is placed in the pressure frame and obviates the necessity for using very thick glass.

In an instrument employed in the albumen and chloride of gold processes, a plate is connected with a stand by means of rods proceeding from its opposite sides to a common stem; a spirit lamp can thus be placed under the plate, and the photographic plate is secured to the plate by means of cramps.

In an iodizing frame the tenoned plate is surrounded with suitably shaped pieces of glass, to prevent evaporation by making an air-tight joint.

[Printed, 7*u*.]

A.D. 1856, September 16.—N° 2254.

LANGLOIS, CLAUDE.—“This invention consists in a method
“ of arranging photographic cameras so that the operator can
“ adjust the focus from the front, or that side next the person or
“ object to be taken, and also so that the moveable frame for
“ containing the prepared glass or other material for receiving the
“ image may also be used for ascertaining the correct focus.”
On one side of the camera folding doors are hinged to the front and back, and close together in the middle. The door hinged to the front of the camera is inclined to the front 45° when closed; it also has an aperture which serves for focussing and for opening the front door of the slide. The plate frame “has a hinged door
“ at the front and at the back, one for introducing the plate and
“ the other to be opened for exposing it;” it is mounted on a centre round which it can be turned half round; upon the frame being placed in the camera, the image is focussed upon the door at the back of the slide—made white for that purpose; the slide then being turned half round, the plate is exposed by the opening of the front door, the operator’s hand being introduced through a sleeve for that purpose. “Screw feet” enable the camera to be adjusted to any required inclination.

“This invention also consists in backing photographic pictures
“ with plaster of Paris.” A positive collodion picture (printed by the light of a lamp) is backed with plaster of Paris in the following manner:—The plaster is poured on the collodion surface and a piece of muslin is applied over the plaster, this operation being repeated until the required thickness is obtained. If it be required

to remove the glass from the picture, the glass plate is first coated with gum, and when the picture has been printed and backed, the gum is dissolved by warm water, thus leaving the picture on the plaster; the resulting shining appearance of the picture is removed by ether. The plaster may be saturated with wax, when coloring is to be applied, and it may be cemented to metal, &c., to strengthen it.

[Printed, 4d.]

A.D. 1856, October 23.—N° 2486.

JOHNS, GEORGE EDWARD.—The title of this invention is, “The application and adaptation of an optical or stereoscopic arrangement in the manufacture of boxes;” it consists in combining an optical or stereoscopic apparatus with ornamental and other boxes, “capable of such an arrangement, whether such boxes be manufactured of paper, wood, or any other material or materials.”

The stereoscopic tubes and glasses are fixed to the front of the box; “the object or photographic views” are placed against “the inner back of the box,” the box being empty when used for stereoscopic or optical purposes.

“It will be seen, that all that is necessary to turn any box with this arrangement into a complete stereoscope, will be to adapt the focuses of the stereoscopic lenses to the proper viewable distances from the views to be placed against” “the inner back of the box, and the tubes to the necessary width apart, so that both eyes of a spectator may, at the same time, through the tubes, see the object in the box.”

“The stereoscopic lenses may be applied to any part of the box to which it may be necessary or desirable to affix the same.”

[Printed, 3d.]

A.D. 1856, November 3.—N° 2581.

SCOTT, EBENEZER ERSKINE.—“Improvements in stereoscopes.”

This invention consists in “the use of eye pieces composed of two magnifying lenses, either entire or modified,” “placed so that their centres are at a greater distance apart than the eyes of the observer, the said distance being either fixed or capable

“ of adjustment, so as to produce the maximum of pleasant effect in the use of the instrument.”

The double eye piece is so arranged “that the rays from the two pictures come to the eye as if they radiated from a point of medium distance, such as that at which we are in the habit of looking at natural objects, the effect being” “that the eyes of the observer instantly form the combined picture without the slightest pain to the eyes, and the reality of the view is consequently much more strongly impressed on the mind, and the pleasing illusion much increased.”

The lenses may be made achromatic with the plain surface next the eye, and in all cases the chromatic and spherical aberrations are greatly reduced.

An instrument is shown in the Drawings in which a diaphragm enables each eye to view only one picture; the picture is adjustable by means of a screw, to the centre of the field of vision, and suitably placed diaphragms shut off all extraneous light, thus permitting only the view to be seen. The box is mounted on a stand, and is capable of adjustment by a sliding rod and pinching screw.

[Printed, 7d.]

A.D. 1856, November 6.—N^o 2614.

OLLEY, WILLIAM HENRY. — “Improvements in obtaining photographic impressions or pictures of microscopic objects.”

This invention consists in obtaining the above-mentioned impressions “by the combined use of the microscope, the camera lucida, or other suitable reflector or reflectors, and the camera obscura.”

“The metallic cap by which the eye piece of the microscope is usually surmounted” is removed, and “the four-sided reflecting glass prism known as the camera lucida, or any other suitable and analogous reflector or reflectors,” is or are placed upon or near the eye piece so as to produce an image of the object of which an impression is to be obtained. “The tube or body of the instrument having been brought into a horizontal position, an inverted camera obscura, or darkened box, is placed over the said prism,” it (the camera) being so connected with the microscope tube as to exclude light. Upon the object being

properly placed before the object glass of the microscope, an image of the said object will be formed by reflection from the prism or other reflector upon a prepared plate or surface previously introduced into the camera. After the prepared surface has thus been exposed to the action of light, it is removed from the camera, and subjected to the usual processes of developing and fixing.

[Printed, 8d.]

A.D. 1856, November 26.—N° 2806.

PALMER, HENRY EASTMAN.—“ This invention consists in a method of arranging photographic cameras and apparatus so that the plate may be rendered sensitive and the picture developed and fixed within the chamber of the camera.”

The camera chamber contains the following apparatus :—A bag or well, of flexible waterproof material, for holding a vessel containing the solution of nitrate of silver, fixed underneath the plate frame. A tank, also under the camera, and nearer to the lens end, containing water heated by a lamp; the lamp is used to heat the chamber in cold weather. The waste pan, under the camera near to the plate end. A cold water reservoir, of flexible waterproof material, at the back and upper part of the camera, with a flexible tube and stopcock; this reservoir supplies water to the interior of the chamber, to the hot-water tank, and to a condenser that is close by the hot-water tank and in which the steam produced in the hot-water tank is condensed. Manipulating sleeves, attached either to the back or sides of the camera. Two eye pieces, and a small window glazed with yellow glass, to enable the photographer to see his operations. The plate frame; this can be slid to and from the lens by means of a rack, and can also be placed in an inclined position. The frame, containing the lens, attached to the camera by means of a flexible tube capable of adjustment by means of a set screw. Vessels containing the developing and fixing solutions, suspended from the rods that support the top of the camera and the cold water reservoir.

The sides of the chamber are made of waterproof fabric, supported by rods set upon the ordinary tripod.

The cap of the lens is a disc with a hinge.

[Printed, 7d.]

A.D. 1856, November 29.—N° 2832.

HARMER, RICHARD.—"Improvements in stereoscopic pictures."

The inventor states:—"My invention relates to colouring stereoscopic pictures, that is, pictures to be viewed in the stereoscope produced by the camera or any other means, the same being printed on paper chemically prepared by the agency of light or otherwise, as usual.

"In pictures viewed in the stereoscope two similar pictures are introduced to produce one view, which two pictures heretofore have been exactly similar in every particular in colour and outline, or as nearly so as may be, whereas according to my invention, I produce and use two pictures in the ordinary way, similar in outline but different in colour. For example, one picture may be coloured emerald green and carmine, and the corresponding picture used therewith may be coloured blue and violet, which colours when viewed in the stereoscope blend with each other, and greatly enhance the effect produced. Any other colours may be used, and if selected and used with judgment produce beautiful effects in such pictures."

The colours are applied by hand.

[Printed, 5d.]

A.D. 1856, December 3.—N° 2871.

CHEETHAM, JAMES KINDER.—"Improvements in the application of photographic pictures to metal and other surfaces, and in rendering the same applicable as printing surfaces."

1st. Obtaining designs upon copper which may be used for ornamental purposes, "or upon which the engraver may work by any of the usual methods." A varnish composed of shellac dissolved in a solution of borax is applied to a collodion photograph; "when this is dry, a piece of paper painted with the same materials is applied wet, and the whole allowed to dry, after which the plate is placed in cold water, and the film will then separate from the glass." This film is placed upon a sheet of copper that has been coated with mercury, the reduced silver of the photograph transferred to the mercury by rubbing or pressure, and the film separated from the metallic surface by heat. A variation of this process consists in removing the film with its picture from the glass by means of a solution of gutta percha in

benzole, applying it (the film with its picture) "to the mercurialized metallic surface," and removing the film only from the metallic surface by dissolving it in methylated chloroform; "the mercury may then be driven off by heat if desired." It is important to observe that "the picture is not caused to adhere to the metallic surface by any glutinous substance," "but is connected thereto by the mercury, after the ordinary manner of gilding."

2nd. Printing surfaces are obtained from photographs by etching the silver picture, obtained according to the method set forth in the 1st improvement, so as to leave one portion of the surface in relief. The etching fluid may be nitric acid.

3rd. Producing lithographs by transferring the aforesaid silver picture on to a surface of copper electro-deposited upon a stone. The "bare copper" is then dissolved away, the stone run over with an inking roller, and the metal picture removed, "leaving a clear surface of stone for the light portions." "This operation may be reversed."

[Printed, 3d.]

A.D. 1856, December 5.—N^o 2887.

KLOEN, WILLIAM, and JONES, DANIEL.—(*Provisional Protection only.*) "An improvement or improvements in photography."

This invention "consists in substituting the materials, herein after enumerated, in place of glass, for taking the photographic pictures upon, called positive collodion pictures. When glass is used for the said pictures, the said glass requires to be blackened at the back if colorless, and when, to avoid this trouble, black glass is employed, the brittleness, which is one of the greatest objections to the use of glass is unremedied."

This invention "consists in the use of materials which present a black surface, which are not brittle, and which have such a chemical composition as not to act prejudicially on the materials employed in taking the picture." The material preferred "is papier mâché, and the various compositions and materials which are or may be used as substitutes for papier mâché, such as plates of metal, wood, or other substance covered with the varnish or japan with which papier mâché is usually covered. The plates on which the pictures have been taken may be applied to trays and such other articles as are or may be made of papier mâché."

[Printed, 3d.]

A.D. 1856, December 9.—N° 2914.

BROWNING, JOHN.—(*Provisional Protection only.*) “Improve-
ments in stereoscopes.”

This invention “consists in wholly or partially coating the exterior of the instrument with glass, either silvered, painted, etched, stained, engraved, or otherwise ornamented, and in the employment of colored screens of glass to intercept the light transmitted directly through glass or other transparent slides, or reflected upon paper or other opaque slides, thereby producing effects upon the pictures, when viewed with the improved stereoscope, resembling those produced by what are known as Claude Lorrain glasses.” When the improved stereoscope is used with transparent slides, pieces of coloured glass, of any required tint, are placed “in a groove at the bottom of the instrument underneath the slide containing the picture or other object. When opaque slides are used, the colored glass screens are slid into a groove in front of the instrument, over the usual aperture made for that purpose.”

“The bottom portion of the front of the instrument being composed of glass,” the door and reflector at present in use may be dispensed with, or coloured reflectors of metal or glass may be employed as may be required. When transparent slides are examined, an opaque glass closes “the aperture in front of the instrument;” this opaque glass “can be concealed within the instrument when opaque objects are viewed.”

[Printed, 3d.]

A.D. 1856, December 19.—N° 3009.

MASSI, CHARLES.—(*Provisional Protection only.*) “This invention has for its object improvements in apparatus for mounting cameras. For these purposes, when two cameras are used to take two pictures at the same time and at an angle to each other for stereoscopic purposes, the two cameras are placed on a suitable surface or stand, through which are two parallel slits or openings for the passage of two pairs of studs or upright projections, which are fixed to two bars, one pair to each bar. The two studs or uprights of each bar are at a distance apart from each other, so as to pass through the two parallel slits in the

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“ surface above. The two cameras are each placed on to the
“ two stems or uprights of one of the bars, by which means, so
“ long as the two bars are parallel to each other, the cameras will
“ be parallel, but when the bars are made to incline to each other,
“ a similar inclination is given to the two cameras. The two
“ bars are actuated by means of two screw shafts or axes, each
“ having a right handed screw at one end, and a left handed screw at
“ the other end. The two bars have each two screw nuts attached
“ thereto, through which the two screw shafts or axes pass, and
“ they actuate the two cameras in such manner, that if both the
“ screw shafts or axes are simultaneously turned, the cameras
“ approach to or recede from each other according to the direc-
“ tions in which the screw shafts or axes are turned. And when
“ only one of the screw shafts or axes is turned, or when one is
“ turned in excess of the other, the cameras are made to incline to
“ each other to the extent desired. By these means two pictures
“ may be more conveniently and more correctly taken at the
“ same time than heretofore.”

[Printed, 3d.]

1857.

A.D. 1857, January 1.—N^o 11.

PHILLIPS, WILLIAM HENRY. — “Improvements on stereo-
“ scopes.”

“The frame or case of a stereoscope is made in two parts,
“ hinged or connected together at or near the base of each in such
“ manner that the eye pieces may be brought to or moved from
“ each other with greater facility than heretofore to accommodate
“ for different sights. The movement of the two parts may be
“ accomplished by hand when holding a stereoscope to the eyes,
“ or by a screw, or other convenient means. The lenses and eye-
“ pieces, in place of being mounted in sliding tubes, as heretofore,
“ are each mounted on a tube, produced by winding a plate or
“ strip of sheet metal or other suitable material spirally, and the
“ elongating or contracting of such tube may be by a screw or
“ other convenient means. In order to give a better finish to the
“ picture, it is arranged to be seen through openings of another

“ photographic picture, representing a frame or curtain, or other
“ suitable device, according to taste, and such second pictures
“ may be either fixed or moveable in respect to the stereoscope,
“ and also in respect to the pictures used therewith. When
“ separate from the pictures different pictures may be viewed
“ through the openings of the same second picture.”

The Drawings show a stereoscope in which the two parts above mentioned that carry the eye pieces are connected to the two ends of the base by a flexible material; a hinge joint connects the two parts together. The distance between the eye pieces is regulated by a right and left handed screw. The elongation or contraction of the eye-piece tubes is accomplished by means of a right and left handed screw. In another form of stereoscope the spiral tube is the body of the instrument, and carries both eye pieces.

[Printed, 84.]

A.D. 1857, January 20.—N^o 168.

QUIN, RICHARD.—(*Provisional Protection only.*) “ This invention consists of improved methods of arranging stereoscopes. For this purpose the front and back of the instrument, which are rigid, are hinged or jointed to the top or portion containing the eye pieces, and they are connected together at the sides by flexible gussets, so that they may be folded down parallel to each other when the instrument is out of use. To the back of the instrument a stiff partition is hinged, which turns up so as to keep the front and back at a suitable distance apart when the instrument is set up for use; or in place of a central partition the instrument may have two stiff sides turning up in a similar manner, in place of having flexible side gussets, as previously mentioned.

“ In the front of the instrument is a reflector of the ordinary description, which, when the instrument is folded, is fastened in its place by the same clasp as that which holds the front and back together. This clasp is made in three portions; one fixed to the back of the instrument, another folding over the edge, and the last turning down on the front, and catching over a pin fixed on the outside of the reflector.” The instrument, when arranged in this manner, forms a box capable of containing a number of stereoscopic pictures.

Another arrangement consists in using a stiff bottom, to which the front and back of the instrument are connected by a flexible joint; the top of the instrument being connected in a similar way to the front and back, "the parts of the front and of the back double in and fold one over the other when the instrument is out of use. A central partition is used to make this instrument rigid when set up."

Folding stereoscopes may be made with a stiff front, to which the top and bottom are jointed; the back and sides are flexible.

[Printed, 3d.]

A.D. 1857, January 22.—N° 191.

MANDER, ELISHA, and MORGAN, WILLIAM.—(*Provisional Protection only.*) "Improvements in the manufacture of photographic, jewellers', and other cases having wood or papier mâché foundations, and where raised, regular, or irregular forms are required in such cases, and the machinery for carrying out such improvements, parts of which are applicable to other purposes where sawing or shaping is required."

The improvements relate to various modes of "mitring" the angles; holding the material together; preventing warping; combining papier mâché, millboard, and wood; forming the tops and bottoms; and "the employment of composition or glue, or marine glue with sawdust, in hot moulds to form cases."

The saw of the sawing machine is placed at an angle of 45° to the table, and traverses "by suitable contrivances, the material being held stationary in guides, or the saw may be stationary and the material moving against it.

"The shaping of the various portions of cases is performed by a machine, having two lathe heads geared together and arranged either side by side or facing each other, one having an arrangement for holding the material to be cut, and the other a maundril corresponding with or the reverse of the form required, the cutter running in a rocking shaft or spring slide placed on a slide passing before or between such heads; or a single head may be used, the maundril being placed on the spindle of the said head; or the action may be reversed, the head may be made to rock instead of the cutter."

[Printed, 3d.]

A.D. 1857, February 4.—N° 321.

LEWIS, EDWARD, and BÖHM, GIDEON.—(*Provisional Protection only.*) The title of this invention is, "Improvements in printing in colours, called an improved photo-galvanographic chromographic process."

The inventors state:—"The object of this invention is to use plates or impressions from plates prepared by a process called the photo-galvanographic process, in the art of colour printing or chromography. The first named process, which forms the subject of Letters Patent granted to M. Pretsch, consists in the peculiar adaptation of the photographic process to the production of printing plates in copper and other metals. Now, our invention consists of the use of these plates or impressions as a basis, outline, or groundwork for pictures printed in colours on wood, stone, metal, or other substance."

[Printed, 3d.]

A.D. 1857, February 9.—N° 374.

TAYLOR, THOMAS JOHN.—(*Provisional Protection only.*) The title of this invention is, "An improved construction of stereoscope."

The inventor states:—"This invention relates to the application to stereoscopes of a reflecting surface, which will enable opaque photographic pictures to be viewed with greater ease, and seen with greater clearness than where the ordinary construction of stereoscope is employed. For this purpose, I apply to the under surface of the hinged door of the stereoscope a plane or concave mirror, (preferring the use of silvered glass,) and the door thus provided I set at any required angle with respect to the plane of the photographic pictures, by means of a quadrant, arc, or other suitable contrivance, in order that the reflecting surface may receive the light and transmit it to the surface of the double picture. Or, I apply to the stereoscope a fixed surface or screen, instead of a movable one, provided with a plane or concave reflector.

"By this arrangement not only will the picture be more clearly seen than heretofore, but the spectator when using the stereo-

"scope will not require to stoop in order to permit the rays of light to strike directly upon the picture."

[Printed, 3d.]

A.D. 1857, February 18.—N° 478.

MOULE, JOHN.—This invention consists of "improved apparatus to be used for burning pyrotechnic compositions or preparations," and "relates to a means of burning any of the chemical compounds that are usually employed for producing various colored lights, such as are required for theatrical performances; some of which chemical compounds will, however, produce lights of such a quality as will admit of their being used for photographic purposes."

In one apparatus, a wide shallow vessel containing sand, is provided for the reception of the pyrotechnic composition; this vessel is placed within a glass cylinder or other suitably shaped case with openings at the bottom "to admit air in vertical columns all round the burning composition," and a moveable cap connected with a flue or chimney. A hinged door enables access to be obtained to the interior of the glass case.

In another apparatus, the pyrotechnic composition is contained in a tube "up which it is pressed or forced by means of a coiled spring," "somewhat in the same manner in which candles are pressed up in candle lamps." The charged tube is fixed in a case similar to that of the apparatus first described; it has a knife attached to a lever for the purpose of dividing the charge into several parts.

The effect of either of these apparatus is to carry off the noxious vapours or gases from the burning composition, and thus prevent annoyance to bystanders.

The glass surrounding the burning composition may be coloured so as to render the light "useful for photographic purposes."

[Printed, 9d.]

A.D. 1857, February 20.—N° 501.

GLOVER, JOSEPH, and BOLD, JOHN, the younger.—The title of this invention is, "Improvements consisting of extended uses of photography as applied to dials, tablets, and pictures."

Enamelled glass, metals, or other suitable mineral substances are operated upon in the following manner:—The surface of the material is first washed with fluoric acid to destroy the gloss, and then with water. The material thus prepared is ready to receive the collodion or other sensitive substance, and to be subjected to the ordinary photographic operations of receiving the image, and developing and fixing the same. "Translucent or transparent tablets and dials may be taken on glass or other transparent, semi-transparent, or opaque substances by the above process. By thus preparing the enamelled or other surface, pictures or subjects printed thereon are rendered capable of receiving water colors, oil colors, dry colors, and varnish colors."

[Printed, &c.]

A.D. 1857, April 9.—N° 1005.

PURNELL, JOSEPH.—(*Provisional Protection only.*) "Improvements in apparatus for taking photographic pictures."

An apparatus is described in which "the photographic surface is rendered sensitive within the camera." A clamp, suspended by a rod passing through the top of the camera, presses against the two edges of the plate by means of two jaws. The prepared plate having been placed in the clamp, is lowered by means of the rod into an exciting bath "let into the bottom of the camera." When it has remained in the exciting bath a sufficient time, "it is in the same way raised out of it, and the picture is taken while it is still held by the clamp; afterwards the hand of the operator is introduced through a sleeve into the interior of the camera, and the plate is removed from the clamp and placed in a drawer at the bottom of the camera, which is then closed by a slide, and the drawer is removed for the developing operation to be effected." To develop the picture a cover fits on the top of the drawer; "this cover is furnished with eye-pieces, glazed with yellow glass;" "the bottom of the drawer is also made of yellow glass;" the picture is developed by pouring the requisite solution over the plate, then water is poured over the plate "through a trapped hole in the side of the cover, and it is allowed to run out by a valve at the bottom of the drawer. The picture is fixed in the ordinary manner."

For taking stereoscopic pictures the lens of the camera is

mounted on a slide, and in taking the two pictures is pushed first to one side and then to the other of the camera. A moveable partition prevents the light falling on one side of the plate while the picture is being taken on the other side. To move the camera suitably in order to take the second picture, it has a rectilinear motion along a board, and an angular motion by turning the board on its centre.

[Printed, 3d.]

A.D. 1857, May 4.—N° 1253.

MOSELEY, THOMAS BEEBY.—(*Provisional Protection only.*)
The inventor states:—"This invention relates to a particular
" description of instrument called a pneumatic holder, used very
" generally in photographic manipulations, and the improvement
" which constitutes this invention consists in constructing the
" same in the following manner, that is to say:—Instead of
" simply affixing a bell-shaped piece of india-rubber to an up-
" right handle and exerting pressure direct thereon, I affix an
" annular piece of wood or other light substance to one end of
" a piece of wood or other material which serves as a handle.
" Into the aforesaid annular piece of wood I place a bell-shaped
" piece of india-rubber, and connect it by a wire to one end of a
" horizontal lever, the fulcrum of which is a pin passing through
" the handle of the instrument, so that in using this instrument
" the operator has simply to place the india-rubber surface upon
" the article to be held thereby, and by forcing down the aforesaid
" lever, I raise the bell-shaped piece of india-rubber within the
" before-mentioned annular piece of wood, thereby producing a
" partial vacuum therein and causing the india-rubber to adhere
" closely to the surface, which it is desired to hold. The aforesaid
" lever may be securely held in this position by a sliding link or
" other suitable contrivance."

[Printed, 3d.]

A.D. 1857, May 27.—N° 1511.

NEWTON, WILLIAM EDWARD (*a communication*).—"An im-
proved method of applying photography to the use of engravers."
—The invention has for its object "to produce a photographic

" picture upon a surface of wood that shall entirely answer the requirements of the engraver;" and it " consists in producing a surface upon the block by rubbing into it a volatile varnish made so limpid as easily to soak into and fill the pores of the wood, and produce a smooth and polished surface without leaving a pellicle thereon of appreciable thickness to obstruct the operations of the engraver."

" The surface of an ordinary engraver's block is smoothed in the customary manner to prepare it for the engraver's use; a mixture is then made of asphaltum varnish, ether, and lamp-black. This mixture is rubbed into the surface of the block with a piece of buckskin or cloth, two or three thin coatings being applied so that the pores may be thoroughly filled, but no pellicle of varnish of appreciable thickness left upon the surface. An even, smooth, and polished surface is thus obtained, upon which to take the photographic picture; upon this surface the collodion is poured in the ordinary manner of taking photographic pictures; the silver bath is then applied. The block is then exposed in the camera a sufficient length of time to take the picture," and it is then subjected to a developing solution compounded of sulphate of iron, acetic acid, water, and alcohol. The picture is then fixed by means of a solution of "cyanuret of potassium," " and the block is to be washed in clear water and dried, when it is fit for the engraver."

[Printed, 3d.]

A.D. 1857, June 2.—N^o 1550.

SHAW, CHARLES.—(*Provisional Protection only.*) This invention is entitled, "A new or improved manufacture of mats for photographic and other pictures."

The inventor states:—"My said invention consists in manufacturing the said mats of card or paper, plain or coloured, and gilded or partially gilded, or covered with a metallic coating. The said mats may be cut out and embossed at a press, or manufactured by rolling, or by pressure otherwise applied. Any desired ornamental form may be given to the said mats by suitably engraving the dies or tools by which the said mats are made. Mats made of gilded or plated paper or card according to my invention cannot be distinguished when con-

“ nected with a photographic or other miniature from matts made
 “ of metal. Matts made according to my invention are less costly
 “ than the ordinary metallic matts. Although I prefer to use
 “ paper or card in carrying my invention into effect, yet papier
 “ mâché, or other composition or mixture consisting mainly of
 “ vegetable fibre, may be employed with the same or nearly the
 “ same effect.”

[Printed, 3d.]

A.D. 1857, June 3.—N° 1558.

CHAPPUIS, PAUL EMILE.—(*Provisional Protection only.*)
 “ Improvements in stereoscopes.”

“ This invention consists of the use of metallic or other
 “ reflectors in or on stereoscopes, for the purpose of increasing
 “ the intensity of light brought to bear on the objects viewed
 “ through that apparatus.”

[Printed, 3d.]

A.D. 1857, June 6.—N° 1595.

NOË, HENRI JOSEPH.—(*Provisional Protection only.*) The title
 of this invention is, “ Improvements in portable stereoscopes.”

The inventor states :—“ In constructing portable stereoscopes, I
 “ form each end piece in two parts, connected by a folding joint,
 “ and over the eye glasses in the upper piece I place a folding
 “ piece or jointed lid. The bottom of the instrument, or the piece
 “ which supports the pictures to be viewed, is connected to the
 “ upper portion of the instrument by an expanding connecting
 “ piece, or bellows joint, so that the distance between the pictures
 “ and the eye glasses may be varied by means of adjusting screws,
 “ or otherwise, to suit the vision of the person using the instru-
 “ ment. I also colour the reflecting surface of the instrument
 “ variously, to produce different effects, as may be desirable. I
 “ sometimes affix the bottom of the instrument to a case or port-
 “ folio, which, when the stereoscope is not in use, may be folded
 “ over it, and fastened by an elastic strap, or otherwise.”

[Printed, 3d.]

A.D. 1857, July 1.—N° 1835.

NEWTON, WILLIAM EDWARD (*a communication from Charles
 re*).—The object of this invention “ is to reproduce copies of

“ photographic images, drawings, and prints, by obtaining from
“ them by the action of light in conjunction with the employ-
“ ment of chemical and galvanic operations engraved plates,
“ either in intaglio or in relief, upon iron, steel, copper and its
“ alloys, zinc, silver, tin, aluminium, gold, and other metals; also
“ to produce damaskened designs formed by metals of various
“ colors; also designs formed of different colors, by means of
“ several engraved plates, registering one with the other; also
“ designs of different colors, gold and platinum upon porcelain,
“ earthenware, stoneware, &c.; also enamel or ‘ nielle ’ work and
“ inlaid work upon metals, marble, stone, &c.”

The photographs employed are “ negative reversed proofs, and
“ ordinary positive and negative proofs.”

A layer of organic matter is spread upon a plate of polished metal. It is essential that this layer is sensitive to light, and can at the same time act as a varnish, to protect the metallic surface underneath from the action of acids. The sensitive layer is then acted upon by light, in a manner suitable to the effect ultimately to be produced, and the parts of the layer that have not been exposed to light are removed by a suitable solvent. All parts of the metal that have been laid bare by the solvent are then coated with a less oxidizable metal than that of the underneath plate, by means of electric force; the protecting layer is removed; the result is a “ heliographic incrustation ” of a different metal to that forming the ground of the picture. The plate may now either be oxidized or sulphurized, to obtain a colored damaskene, or it may be engraved by immersion in acids, or in electro-etching solutions; after the first biting in, the parts in relief are inked, and the biting in finished. To obtain an inlaid design from an etched plate, the parts in relief are protected by varnish, and the sunken parts are filled up by electro-deposited metal.

“ ‘ Nielle ’ work is obtained by filling up the hollow parts with
“ a substance which will melt into an enamel by means of fire.”

Instead of etching the design upon the plate, an electro-cast may be taken from it.

If a layer of gelatine, added to bichromate of potash, has had a design impressed upon it by means of a “ reversed negative,” and has been acted upon by a solvent, “ the polished metal will be laid
“ bare at those parts which correspond to the light parts of the
“ design;” these polished metal portions having been covered

with printing ink, and the gelatine (and metal under it) having been acted upon by acid, an engraving in intaglio or in relief is obtained.

Engraved plates in intaglio and in relief may also be obtained from photographs, &c., by reducing the metal "in the parts of the sensitive layer acted upon by the light, when this layer consists of a salt of silver or any other metallic salt sensitive to light," and depositing copper upon the metallized design. "When the deposit is considered sufficient it may be detached."

[Printed, *sd.*]

A.D. 1857, July 2.—N° 1843.

MCCRAW, WILLIAM.—(*Provisional Protection only.*) "This invention relates to certain improved processes of producing positive photographic images or pictures on white or light-tinted substances, either vitreous, animal, or vegetable."

According to one process, a slab of unglazed porcelain is coated with collodion, excited and exposed in the camera in the usual way; it is then developed by a weak developing solution, and "immediately washed before any visible or appreciable effect is produced." After a momentary exposure to light, it is again treated with a developing fluid; the result is a positive photograph, "with the right and left reversed."

According to another process, a glass negative photograph is "placed in front of the camera at a suitable distance off, with a mirror or reflector placed behind the image at an angle of about 45 degrees, to act upon the principle of the microscopic reflector." The prepared porcelain slab is exposed in the camera, and the image developed, fixed, and washed in the usual manner. A clear and well-defined positive and direct photograph is the result; this may be treated with chloride of gold solution to heighten the effect, dried, and varnished, also coloured, if required.

By either of these processes positive photographs may be produced "on porcelain, china, ivory, bone, mother-o'-pearl, white enamel, white or opal glass, and other surfaces, which, by reason of the inequalities of their surfaces, or the rigid nature of the materials, are rendered unfit for receiving photographic images from negative photographs in the ordinary way."

Stereoscopic slides on white or opal glass can be produced by either of the above-mentioned processes.

[Printed, 8d.]

A.D. 1857, July 7.—N° 1883.

BÉRARD, PETER HIPPOLYTE GUSTAVE.—“Improvements in
“ manufacturing azotic cotton or pyroxile for photographic and
“ other purposes.”

The cotton used for this process “is that obtained from the
“ shearing of swan skins (tontisse de molleton).” Two glass
bottles are taken; a certain proportion of concentrated sulphuric acid and “powdered azotate of potash” is placed in one bottle, the bottle closed at once with its stopper, and shaken; the liquid is then poured into the other bottle containing the shearings of cotton, and the bottle closed directly. “The mixture forms a
“ thick paste, which is shaken several times,” and the operation is completed in from six to ten minutes. The product is then washed by pouring filtered water into the bottle, pouring the whole into a large glazed earthen vessel containing filtered water, draining off the superincumbent liquid by means of a stopcock, and pouring in fresh water and so on until the liquid no longer acts on litmus paper. The cotton is then dried “by means of an
“ apparatus rotating quickly (une essoreuse);” “the drying is
“ then completed in a chamber heated by steam pipes.”

“In order to obtain a greater solubility, ensure its preservation,
“ and avoid the causes of spontaneous alteration and the danger
“ attending removals, the azotic cotton is dissolved either in ether
“ or in the usual mixture of ether and alcohol; it is then left to
“ settle, and the solution being drawn off is evaporated by means
“ of a still so as to collect the ether which distils over.”

The collodion thus obtained “is dry, diaphanous, entirely
“ soluble in ether and in alcoholic mixtures, and is ready for use
“ either for surgical or for photographic and other operations.”

[Printed, 8d.]

A.D. 1857, July 7.—N° 1884.

BÉRARD, PETER HIPPOLYTE GUSTAVE.—“Improvements in
“ manufacturing and applying concentrated collodion,” applicable to the collodion used for photographic purposes.

"Concentrated collodion" is economically prepared, "either by dissolving the azotic cotton in a warm state, or by concentrating the solution, in which case sixty per cent. at least of the ether used can be recovered. The *modus operandi* consists in dissolving the azotic cotton with the assistance of heat in a common distilling apparatus, composed either of a metallic, glass, or earthen vessel, heated by means of a water bath, and provided with a worm as usual, which worm is cooled by cold water." The distillation is continued "until the collodion is concentrated to the required degree for the preparation to which it is intended to be applied." The quantity of ether distilled and condensed, as shown in a graduated vessel, is an indication of the amount of concentration.

The collodion, thus manufactured, can be made to yield sheets as thin as the thinnest paper, as well as plates as thick as stout leather. In this process, instead of the cotton remaining several days in cold ether, to effect its solution, the solution of the cotton is almost instantaneous.

To prepare a coloured collodion, the colouring material (ground with castor oil) is added to the distilling vessel, and the distillation carried on as far as necessary.

[Printed, 3d.]

A.D. 1857, July 28.—N^o 2058.

BAXTER, EDWARD WILLIAM.—"An improved mode of preparing glass labels, advertizing tablets, and ornamental devices upon glass," in which photographic processes are used.

To copy the device in gold or silver.—That part of the surface of the glass which is to receive the device is coated with weak isinglass size, and overlaid with gold or silver leaf. The metal leaf is then backed with a varnish composed of "asphaltum" dissolved in turpentine, which will become insoluble when exposed to the action of light. A negative design, made upon a transparent medium, either by the aid of photography or by painting or printing, is then applied to the sensitive surface and exposed to the action of light, thus fixing the parts left uncovered by the negative. The negative is then removed, the unfixed portions of the varnish dissolved off by means of turpentine, and the *superfluous gold or silver* wiped away by means of a damp piece of

cotton wool; "there will remain on the glass a perfect counter-part of the device contained on the negative plate."

"When using a pigment in place of metal leaf, it is to be mixed with resinous varnish or gold size, and laid thinly upon the glass surface, and when dry it is to be subjected to the above-named treatment."

To produce devices in frosted silver.—A positive design is painted or printed upon a sheet of transparent paper. The glass is coated with a sensitive varnish as above described; the sensitive surface is then overlaid with the positive and exposed to light. The soluble parts of the varnish are then removed; the exposed portion of the glass is acted upon by fluoric acid, and the ornamented surface of the glass is silvered in the usual way.

[Printed, *et.*]

A.D. 1857, July 30.—N° 2078.

BAUERRICHTER, HENRY, and GOTTGETREU, GUSTAVUS.—(*Provisional Protection only.*) "The improvements relate to adapting stereoscopic apparatus so as to obtain simplicity of parts, and in combining therewith a box or case, which, whilst it is suitable to hold such stereoscopic apparatus, is at the same time adapted as a receptacle for handkerchiefs, gloves, stereoscopic slides, or other articles.

"The stereoscopic lenses are supported from one end of a platform or frame, the other end of which is provided with a rest for the pictures, and the apparatus thus formed fits into a box or case in such manner as not to interfere (or only slightly so) with the internal form of the box, which is also of form to receive the stereoscope without interfering with its other uses; the front or other side of the box or case being cut to admit of the lenses projecting or being seen even when the box is closed."

The stereoscope and box is also formed "so that the one fits into and for the time when not in use forms or appears to form part of the other without the lenses appearing externally. For this purpose the part of the stereoscope carrying the lenses and that forming the support for the picture (either or both of them) fold to form part of the hollow of such box or case

“ without otherwise interfering with the internal form of the box or case, and its adaptation as a receptacle for handkerchiefs, gloves, stereoscopic slides, or other articles.”

[Printed, 3d.]

A.D. 1857, September 1.—N° 2295.

ELLIOTT, ROBINSON.—“ Improvements in photography, by which the lensular defects of the present processes of taking photographic prints are avoided, and impressions are obtained of any size.” “ The lensular defects alluded to are the different ways in which the camera represents certain colours; blue, for instance, however powerful or deep, is represented as white, and red as black.”

To attain the above-mentioned objects the following method of copying a picture is pursued:—The surface of a piece of good glass is brushed over with gum water, and the glass is fixed in a frame. The picture is placed underneath the glass, and its outline traced on the coated surface of the glass by means of “ a fine colored point of chalk.” The picture is then removed, a black cloth placed in lieu thereof, and the outline on the glass is painted in the requisite gradations of light and shade by means of white lead, the dark background forming the shades, and the white lead the lights of the picture or painting. The painting has a piece of sensitive paper placed on the unpainted side, and the whole is submitted to the action of light in the ordinary photographic printing frame. The photographic copy thus obtained is fixed in the ordinary manner.

If the copy is required of a different size to the original, the glass painting is taken from an outline on paper of the desired size. The picture may be an original one on the glass itself.

In taking impressions from lace, &c., it may be fixed on to the glass by means of gelatine; the sensitive paper is placed next the lace or other fabric.

[Printed, 4d.]

A.D. 1857, September 4.—N° 2312.

GODET, PROSPER BERNARD.—(*Provisional Protection only.*) The title of this invention is, “ Improvements in stereoscopes.”

The inventor states:—“ Hitherto the stereoscope and the pictures to be inserted therein for view formed separate parts. My

" invention consists in collecting the pictures in the manner as
 " the folios of an album or keepsake, the cover of which latter
 " may be folded up so as to form a box open at both ends. In
 " one part of this cover are fixed the lenses, so that each picture
 " may be placed at its turn in the visual axis of the lenses, in order
 " to be seen in the proper stereoscopic view."

[Printed, 8d.]

A.D. 1857, September 4.—N° 2315.

FERRIER, JACQUES ALEXANDER.—(*Provisional Protection only.*) This invention relates :—

1st. "To a new means of reproducing transparent photographic
 " representations or pictures on other substances than glass."

2nd. "To the application of such pictures or representations to
 " stereoscopes."

The substances alluded to in the 1st portion of the invention are
 " gelatine, gutta percha dissolved in chloroform, in benzine or its
 " solvents, pharmaceutical collodion and india-rubber dissolved,
 " siccative oils, mucilagenous substances, starch, or other amy-
 " laceous substances, such as arrow root, tapioca, &c., soluble or
 " fusible resins, galipot, pounce, white or yellow wax, either in
 " solution or in fusion."

The process is as follows :—"A light coating of neuter collo-
 " dion" is spread over "a smooth and transparent surface,"
 allowed to dry, and coated with albumen: The surface is sensi-
 tized by means of "aceto-nitrate of silver," washed, dried, and
 applied on to a glass negative. Exposure to light then takes
 place, the picture is developed by means of gallic acid and the
 nitrate of silver, fixed with hyposulphite of soda, and coloured.
 A solution of gelatine is then poured over the picture, allowed to
 dry, and the whole detached from the smooth surface on which it
 has been placed. The picture is thus protected on one side by a
 coat of collodion, and on the other by a coat of gelatine, which
 may be coloured. Any of the above-mentioned materials, either
 singly or in combination, may be employed instead of gelatine.

A stereoscopic picture may be made by detaching from glass a
 picture on photographic collodion by means of gelatine or gutta
 percha.

[Printed, 8d.]

No. 20.

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A.D. 1857, September 7.—N° 2332.

LEWIS, WILLIAM, and LEWIS, WILLIAM HENRY.—The title of this invention is, “Improvements in plateholders or frames for photographic cameras.”

These improvements “relate to the frames that receive the glass or other plate on which photographic and similar pictures are taken in cameras,” and consist:—

1st. In a glass receptacle inserted in the bottom of the frame, so as to retain “any chemicals that may drip from the plate.” This receptacle is in the form of a horizontal bottle, with a neck and cork or stopper at one end, “and a dishing or concave upper surface, catching drippings, and passing the same into the receptacle through the mouth or opening;” small projections may be provided on this receptacle, against which the slide shuts down.

2nd. In forming the corners or supports, that hold the photographic plate, of solid glass; these fit into the frame by means of ribs that project into corresponding grooves formed on the inside of the frame; they are fixed by means of putty.

3rd. In a “cut off,” made of a bar of black glass. This arrangement prevents the entry of the light into the frame during the withdrawal of the slide. When the slide is withdrawn, the “cut off” is forced by a spring into a slight groove, “so as perfectly to exclude the light.”

[Printed, 6d.]

A.D. 1857, September 16.—N° 2396.

GODET, PROSPER BERNARD.—(*Provisional Protection only.*) The title of this invention is, “A new mode of illustrating literary productions.”

The inventor states:—“The invention consists in illustrating literary productions by means of photographic stereoscopic pictures taken from groups or scenes formed by living figures or laymen, dressed arranged and combined with the required accessories according to the narratives described in the book or other literary production to be illustrated, and from which narratives or sceneries the said photographic stereoscopic pictures may thus offer a perfect natural illustration, corresponding with the ideas of the author of the book or other literary production;

" thus for instance, I intend to give illustrations of the most
 " conspicuous scenes of living or bygone authors, such as Shaks-
 " peare, Dickens, Lamartine, historical or other works, and even
 " of sacred books, such as the Holy Bible, prayer books, or any
 " other suitable literary productions in general."

[Printed, &c.]

A.D. 1857, September 22.—N° 2459.

NEWTON, ALFRED VINCENT (*a communication from David A. Woodward*).—"Improvements in obtaining photographic pictures."

These improvements consist in "adapting to the photographing
 " camera a lens and reflector in rear of the object glass, in such
 " manner that the instrument may be made to answer the twofold
 " purpose of a camera obscura and a camera lucida."

By means of this apparatus a negative is taken in the usual
 way. For this purpose the ordinary photographic lenses have a
 rack and pinion movement for focussing the object on to the place
 afterwards occupied by the sensitive plate. The negative thus
 produced is then fixed in an open "sheath" or frame, "and placed
 " in the instrument in the same position as before so that the light
 " may pass through it." The reflector is made to pass through
 an aperture in the shutter of a darkened room, and by means of
 this reflector and a lens at the back of the camera "the sun's rays
 " are reflected with great power through the negative, which is
 " focussed on the sensitized paper or canvas;" the open frame
 containing the negative is mounted in a box which slides by means
 of rack and pinion movement, the front lenses have a similar
 mode of adjustment, and by these motions combined the image is
 focussed of the required size.

"To reflect a positive picture for tracing, &c.," a positive picture
 is placed in the open "sheath" or frame, and its image is thrown
 on to the canvas, in a similar way to that used in throwing the
 image of the negative picture on to the sensitive surface, as de-
 scribed above."

[Printed, &c.]

A.D. 1857, September 28.—N° 2494.

QUIN, RICHARD.—(*Provisional Protection only*.) "Improve-
 " ments in the construction of cases suitable for containing pho-
 " tographic and other pictures."

These cases satisfy the three following requirements :—The picture may be enclosed for protection ; the picture may, when placed on a table, be supported by the case in an inclined position ; the picture may be hung so as to exhibit the picture in an ordinary picture frame. The picture is mounted in an inner frame, which is backed with leather and serves as the back of the complete case ; an exterior frame, capable of turning on pins attached to the inner frame, has a lid of the ordinary description hinged to it.

By turning the picture half round on its axes within the exterior frame, and using the lid as a strut, the picture may be placed on a table at the desired inclination.

To hang the picture, the inner frame is turned half round and the lid is closed down on the outer frame.

Another way of constructing cases consists of mounting the picture in a frame enclosed at the back and placing this within a similar frame. "There is a strut or foot hinged to the outer case to support it in an inclined position."

If the lid of the case be hinged by a double hinge to the centre of the top of the case, it will serve either to enclose the picture or to form a strut. To hang the picture the lid is turned over against the back of the case.

If the picture is mounted in a frame hinged to the front of the ordinary case, a spring may throw it up into an inclined position on the opening of the case.

[Printed, &c.]

A.D. 1857, October 5.—N° 2551.

BECKERS, LOUIS (*a communication*).—(*Provisional Protection only.*) The title of this invention is, "Improvements in apparatuses for exhibiting daguerreotype, photographic, and other stereoscopic views and pictures."

The inventor states :—"My improvements consist in arranging inside a box, case, or chamber an endless belt or apron having a series of frames or slides to receive views and pictures attached to it, in such manner as to stand perpendicular to its face ; by moving the belt through a handle outside the box, the pictures are presented successively in a vertical or other suitable position, opposite to magnifying glasses or other transparent media, or to suitable openings. By arranging the pictures at right angles to the face of the endless belt or chain, a larger number of pic-

"tures may be contained and exhibited in a box or case of a given size than by the arrangement of the same parallel with the face of the belt, as is usual in moving panoramas. I secure the pictures in the slides by means of elastic bands and notches formed in the ends of the grooved portions of the slides." ~~See~~

[Printed, 3d.]

A.D. 1857, October 6.—N° 2560.

BROOMAN, RICHARD ARCHIBALD (*a communication from M. Garella*).—"Improvements in apparatuses for taking photographic pictures."

"This invention consists in a method of taking photographic views or pictures subtending any angle up to 360° on a plane surface."

"To effect this, the object glass, together with the whole apparatus, is made to turn on an axis, so as to present the glass, paper, plate, or other sensitive surface, as the case may be, to the object to be taken. The vertical slide or sash slides horizontally into the dark chamber through the side of the camera, and the object glass, instead of being opposite to the centre of the dark chamber, is fitted at the side of the same. The camera is fixed to a board which rests on a bed, and this bed is caused to turn, and with it the rest of the apparatus, by means of suitable gearing at the will of the operator. The moveable sash which receives the sensitive surface is composed of two distinct parts, and is provided with a grooved shutter hinged at one end, so that the shutter can be raised when the sash is fixed in the frame, and returned when the sensitive surface has received the image. The whole is caused to move along the bed by means of grooves and rollers suitably arranged. In the dark chamber, between the sash frame and the object glass, there is a partition extending the whole length of the dark chamber, provided with an opening, which is covered by a diaphragm or card.

"A guide curve is used for the purpose of imparting to the sensitized glass, paper, or plate such a motion that every point of the picture shall remain on the same point of the sensitized surface as near as may be during the exposure of the surface; this guide curve is formed of hard wood or other suitable material to ensure accuracy. In some cases a mirror or prism is used before the object glass;" positive pictures are thus produced.

When negative proofs are required, and when the object glass alone is used, the axis of rotation is placed under the object glass; when positive pictures are required and a mirror is therefore used, the axis is placed at a distance behind the plate equal to the focal distance. The relative motion of the plate, in the former case, is therefore in the same direction as that of the rotation of the instrument, but in the latter case is in the opposite direction.

The Drawings show an apparatus for "obtaining pictures subtending an angle of 100° ." The modification of the apparatus necessary to produce positive pictures by the aid of a mirror is also shown.

As the panoramic views produced upon a plane surface are all distorted, the following apparatus is devised in order to view them free from distortion or deformity:—The picture is placed in a case so as "to assume a position resembling that in which it was taken." The case is semi-cylindrical, and "formed with two horizontal semicircular ends connected by a curved vertical side, its radius being equal to the focal distance of the object glass with which the picture to be examined was produced." The picture is viewed by means of a moveable lens fitted to a vertical pivot in the axis of the semi-cylindrical case. The images are thus seen "as they appeared when transferred to the sensitized surface, and with a certain increase of size and a relation between their parts somewhat analagous to the illusion produced by the stereoscope."

[Printed, 1s. 4d.]

A.D. 1857, October 8.—N^o 2574.

GRUBB, THOMAS.—"An improved photographic lens."

This lens may be either used alone and as a "view lens," or in combination with other lenses of similar or ordinary construction. The distinctive characteristics of the construction of this lens are:—"That the two kinds of glass of which it is formed occupy inverted places in the compound, and that the internal or separating curve is also inverted," and much deeper in the improved lens than in the ordinary or existing photographic lenses.

To construct the improved photographic lens:—

Firstly, a crown lens of suitable focus is first formed; this lens is "of a form approximating to that known as plano-convex; one

" surface is generally, by preference, made slightly concave, and
 " the lense is in such case a 'meniscus.' "

Secondly, a flint lens is formed; one side or surface of this lens is concave and of the same radius of curvature as the deeper side of the crown lens; the other side of this lens is formed " of
 " that curvature which will cause the lens to form with the crown
 " lens previously described a nearly achromatized compound, or
 " more strictly speaking a compound corrected for actinic dis-
 " persion, and which second surface of the flint lens will neces-
 " sarily be a convex surface."

Lastly, the two lenses are placed together " with or without a
 " cement or fluid interposed, so that the surfaces of similar radii
 " shall be adjacent." The " crown lens is next the object."

[Printed, &c.]

A.D. 1857, November 3.—N° 2792.

SWEET, HENRY KINSMAN (*a communication*).—(*Provisional Protection only*.) " Improvements in photographic portraits and
 " pictures."

This invention " consists in taking such portraits or pictures on
 " concave or convex plates of glass or other material in place of
 " taking them on flat plates as heretofore, by which means effects
 " in some respects superior to those hitherto obtained may be
 " produced."

[Printed, &c.]

A.D. 1857, November 9.—N° 2827.

HARDIE, WALTER.—(*Provisional Protection only*.) " An im-
 " proved stereoscope."

" The optical part of the instrument consists of two plane
 " mirrors," " placed side by side, with their reflecting surfaces at
 " right angles to a vertical plane midway between them, but in-
 " clined to each other at an angle." " The pictures are viewed
 " by reflection from these mirrors, the eyes being placed so that
 " the line joining them is perpendicular to and bisected by the
 " above-mentioned vertical plane."

" The pictures must be placed one above the other, head to
 " foot, inverted with respect to the observer, and with a lateral
 " separation of the corresponding vanishing points amounting to

“ about two inches and a half (the distance between the eyes);
 “ those points in the picture for the right eye being to the right
 “ of the corresponding points in the other picture.” Both pictures are not in the same plane, but are inclined to each other; the angle of inclination depends upon their distance from the mirrors and the angle of the mirrors.

“ There is no necessary limit to the breadth of the pictures;
 “ panoramic views and pictures broader than the field of view
 “ may be exhibited by being drawn across the field of view.” If necessary, prisms and lenses may be used with this stereoscope in conjunction with the above-mentioned mirrors.

A stereoscope is shown in the Drawings to exhibit pictures up to ten inches in height. Hinges enable the instrument to be compactly folded up.

“ When not in use the pictures may be folded together face to face;” they may be bound together as the leaves of a book, and exhibited in succession by turning over the leaves without removing them from the stereoscope.”

[Printed, 8d.]

A.D. 1857, November 19.—N° 2903.

GILL, SETH, and NEWTON, HENRY.—(*Provisional Protection only.*) “Improvements in obtaining stereoscopic pictures.”

“ This invention consists in obtaining the double image to
 “ form the stereoscopic picture by a double reflector, and then
 “ taking the pictures by a camera from the reflectors, which may
 “ consist of two silvered plates placed at a convenient angle
 “ to each other.”

[Printed, 8d.]

A.D. 1857, November 24.—N° 2940.

SANDS, CHARLES.—“Improvements in stereoscopes.”

This invention relates “to the actuating, adjusting, and sustaining of the flap or door of stereoscopes, by which the light
 “ is admitted to the picture, such door having a reflector on the
 “ inside which reflects and concentrates the light upon the picture.”

The door is placed upon a stiff hinge, “so that it will remain in
 “ any position in which it is placed,” and “the joint pin or rod

"(which is affixed to the door)" is extended beyond the sides of the instrument and has thumb knobs applied at either end. "By taking hold of the thumb knob the position of the door and reflector can be readily adjusted and regulated while viewing the picture, and it will remain of itself in the position adjusted.

"Instead of extending the joint pin to carry the thumb knobs, a separate rod or axis may be applied for the purpose just above the joint, and a short arm extended therefrom with which the door and reflector is connected. This additional rod with thumb knobs is fitted in its bearings to rotate therein with sufficient friction to sustain the door and reflector as explained, or the door may move with sufficient friction on its hinges for the purpose required."

[Printed, 8d.]

A.D. 1857, December 8.—N° 3034.

PERSHOUSE, HENRY.—(*Provisional Protection only.*) The title of the invention is, "An improvement or improvements in stereoscopes."

The inventor states:—"In stereoscopes as ordinarily constructed the lenses are removed for cleaning their inner surfaces by either pulling the end of the instrument from out the body, or by lifting up the said end upon the hinge, by which it is jointed to the body. My invention consists in making the end of the instrument in which the lenses are inserted engage with the body of the instrument by a lateral sliding motion, the said end being drawn from off the body by a motion similar to that of the sliding lid of a colour box. I prefer to insert a spring in one of the grooves in which the lid slides for the purpose of producing such an amount of friction as will prevent the end from sliding out by its own weight."

[Printed, 3d.]

A.D. 1857, December 12.—N° 3066.

COWPER, CHARLES (*a communication from Testud de Beauregard*).—This invention consists in "producing photographic proofs or pictures by means of carbon or other colouring matter," applied by superposition to a coating sensitive to the action of light.

Paper is immersed in or floated on a warm solution of "bichromate of potash or ammonia," mixed with gelatine; it "is then dried, and its surface covered with the pigment." The pigment may be rubbed over the dry surface with a pad of leather or other suitable material; or it may be "ground up very fine with nut oil or other oil, and rubbed over the surface, which is subsequently immersed in a bath of ether to which a little collodion may be added; or the paper may be immersed in a bath of indian ink or other pigment ground up very fine with water and mixed with gelatine and a little gum or dextrine, and used hot; or rollers or presses or other apparatus may be employed to apply the pigment or assist the operation."

The paper, having been prepared in the dark, is exposed to the action of light and washed in hot water. This "dissolves the gelatine which has not been acted upon by the light, but does not dissolve that which has been rendered insoluble by the action of the light, and which insoluble gelatine retains the pigment and thus produces the image."

Glass or other substances may be substituted for paper.

By employing carbon, pigments, or finely divided gold or silver "photographs or pictures of the greatest permanence and durability may be obtained."

[Printed, 4d.]

A.D. 1857, December 17.—N^o 3101.

HIGHTON, EDWARD.—"Improvements in electric telegraphs."

1st. The substitution of an electro-magnet for a permanent magnet in "the gold leaf telegraph."

2nd. "Recording signs or indications made by telegraphic instruments by means of photography." A strip of paper, rendered as sensitive as possible to the action of light, is moved "uniformly forward by suitable apparatus, as is well understood, & in front of this travelling strip of sensitive paper a magnetic needle or bar is mounted, and this is caused by a suitable arrangement of coils to move in one or other direction, when a current is passing in the line wire. In the magnetic needle or bar a hole is formed, and by suitable optical apparatus light is concentrated at and around this hole, and a portion of it passes through on to the paper, and marks it, so that the position of

"the needle is constantly registered on the paper. In place of perforating the needle or bar itself, it may, if preferred, be caused to actuate a perforated screen."

3rd. "A method of protecting telegraphic wires when buried in the ground."

4th. "A peculiar form of code table."

[Printed, 5d.]

A.D. 1857, December 23.—N° 3148.

NUNN, WILLIAM.—"Improvements in stereoscopic apparatus."

The improvements relate :—

1st. "To the application of glass or other reflectors to stereoscopes, in such manner that more than one person may be capable of looking through suitable glasses or eye-pieces at the same picture or the reflection of it at the same time." "The reflecting surface employed is placed in such position that, whilst the direct view of the picture is obtained as heretofore through one pair of glasses, the reflection thereof may be seen at the same time through other glasses." In the Drawings, one instrument is shown with a reflector, complete in itself, and another consisting of duplicate apparatus, each of which is capable of being used as an ordinary stereoscope; prismatic glasses are also shown near the eye pieces, "to counteract the reversing effect produced by the reflector."

2nd. "To the application of glass or other reflectors to the sides of stereoscopes, in such manner as to facilitate the introduction of reflected light on to the picture or pictures sideways." The Drawings show reflectors on hinges, capable of folding down to the side of the stereoscope.

3rd. To the table or other support to receive the above-mentioned stereoscope. The stereoscope is mounted in a stem sliding freely in a hollow pillar, and provided with a spring stop. The pillar, stem, and stereoscope, when out of use, may be lowered within the central table leg and enclosed by a flap, so that the table may be used for other purposes.

4th. To "the application of india rubber or other elastic means as connections between the eye-pieces and the bodies of stereoscopes, so as to admit of elasticity, and thereby prevent injury to the eyes whilst viewing objects."

[Printed, 5d.]

A.D. 1857, December 24.—N° 3164.

BURLEIGH, BENJAMIN, and DANCHELL, FREDERICK LUDWIG.—This invention has for its object the formation of “receptacles and other articles for photographers” from carbonaceous matters solidified by percussive force, “and afterwards submitted to the action of heat in closed vessels.”

The carbonaceous substances, in a pulverized form, are mixed with “either moist, bituminous, resinous, gummy, oleaginous, saccharine or glutinous matters,” and forced “into moulds, suitable for the objects to be constructed, by stamping or beating with suitable tools by means of machine or other power to the required degree of consistency or solidity, after which the objects are baked or burned in closed vessels.”

“To render crucibles and other objects made of solidified carbon proof against the action of oxygen when exposed to fire, the said articles” are “coated outside with silicious glaze or other substance not liable to be acted upon by oxygen or atmospheric air.”

“To render vessels and other objects impermeable to fluids and gases,” they are glazed or coated “either on the outside or inside, or on both sides when required, with a varnish or lacquer insoluble in the particular fluid or gas intended to be contained in the vessel.”

Many other applications of this invention are set forth.

[Printed, *4d.*]

1858.

A.D. 1858, January 21.—N° 115.

HERMAGIS, HYACINTHE.—(*Provisional Protection only.*)
“Improvements in stereoscopes.”

This invention “relates to improvements in the optical parts of stereoscopes, which improvements produce four important results,—

“1st, perfect rectitude of the lines of photographic pictures.

“2ndly, more zones or fringes of prismatic colours.

" 3rdly, greater increase of the size of the pictures than can be obtained with the prismatic lenticular system heretofore employed.

" 4thly, less fatigue to the eyes as regards their position in the axes of parallel spherical lenses.

" These improvements consist in adapting to the stereoscope, without the aid of any prism, spherical lenses, either simple or achromatic, having parallel spherical surfaces compelling the eyes to be placed at a reasonable distance from the optical lenses, perpendicular to the axes of the said lenses, which allows of the view being more easily taken in by reason of its position towards the converging point of the luminous zones proper to produce the effect of relief in pictures placed in the stereoscope."

[Printed, &c.]

A.D. 1858, February 8.—N° 228.

MATHIEU, FRANÇOIS.—"Improvements in stereoscopes."

" The lenses are fixed in a short box with an opening or openings at the back. A piece of wood or other suitable material is hinged to the back, and another piece of wood is hinged to the first piece and carries the picture holder. These pieces fold up on the box, and are secured by a catch when the instrument is not in use. The picture holder is either permanently fixed, or jointed, or otherwise attached to its base, with or without means of adjustment in either direction, and it lies in a suitable space or recess when the instrument is shut up. The picture holder may be a simple upright piece or pieces, with a spring or springs to secure the picture, or grooved upright pieces or other similar means may be employed to support the picture at the proper distance from the lenses, which may be of any of the known forms. A large amount of light can thus be allowed to fall on the picture, and the instrument is very portable."

" The materials of which the apparatus is constructed may be varied."

[Printed, &c.]

A.D. 1858, February 9.—N° 329.

THOMSON, WILLIAM.—The title of this invention is, "Improvements in testing and working electric telegraphs;

some of the improvements relate to the application of photography to the above-named purposes.

The description of the invention is divided into the following parts:—

1st. Testing the insulation of a telegraphic conductor by means of certain electro-static instruments.

2nd. Testing “the insulation of a telegraphic wire by comparing its resistance to the flow of electricity from a constant source with the resistance of a standard wire to the flow of electricity from the same, or another constant source.”

3rd. Testing “a submarine telegraph wire during the operation of laying it by measuring from time to time the strength of currents produced in it by the electro-motive force of a constant battery or batteries.” Certain galvanometers adapted for use at sea are employed for this purpose.

4th. The use of “a double bifilar suspension” for the “indicator” of electric telegraph instruments.

5th. The use of a conducting suspension wire for the above-named indicators; also the use of a conductor connected with the said indicator and dipping into a conducting liquid, in order to maintain electric communication.

6th. The use of “electro-motive forces, of several different positive and negative strengths, to give different signals in telegraphing.” Certain arrangements of electro-dynamic coils and magnets are used to determine the direction and amount of the electro-motive forces.

7th. A “galvanometric relay or receiving instrument.”

8th. The use of the electrometers, described in the 1st part of the invention as receiving instruments for telegraphic signals made by electricity other than frictional.

9th. The use of the thermal or thermo-electric effects of rays reflected from the indicator of a receiving instrument for the purpose of recording its indications.

10th. The use of *photography* “for recording electric signals as indicated, by motions of an indicator or indicators, either by light reflected from a mirror attached to the indicator, or transmitted by an aperture or transparent part in the indicator, or by influences of a shadow or image of the indicator, or of the shadow or image of any part of it.” “A band or piece of

"photographic paper or other substance sensitive to photographic action" is, "by any ordinary mechanism," caused "to travel at a steady rate across the line of motion of the indicating beam whose movements are recorded by the marks made on the paper or other sensitive substance."

11th. A method of "transmitting telegraph messages between one or more conductors and a different number of conducters." Also a method "by which two or more messages can be sent at the same time from the same station along one telegraph wire."

12th. The use of electric sparks in connection with photographic action for receiving or recording telegraphic signals. "Electric sparks excited by a Ruhmkorff coil or any other convenient instrument," are passed "between any part of the indicator and a sheet of matter fixed or carried along by a regular motion near it;" these sparks record the motions of the indicator by photographic action, by impressions, by chemical changes, or by perforations. "In using electric sparks to record the indications of a moveable body in a galvanometer or galvanometric relay employed for telegraph purposes," a regular succession of sparks is employed; these sparks follow one another at very short intervals of time, and each make a mark "on the paper or other sheet receiving the impression or perforation." In using this part of the invention it is preferred "to cause a strip of paper sensitive to photographic action, or otherwise, to travel with a steady motion across the path of the end of the indicator over a metal plate, above which plate the end of a conductor projecting from, or forming part of the indicator, moves to and fro in consequence of the action of the current transmitting signals. The series of sparks excited by the Ruhmkorff coil or other instrument takes place between the before-mentioned end of a conductor and the metal plate, and makes a series of marks on the paper either by photographic action or perforation, or both. The result is an undulating curve of dots, the character and succession of the undulations of which give the different signals desired to be sent."

13th. "An apparatus by means of which electric signals may be read off" by observing the amount of motion of an indicator. The greater or less amount of motion of the indicator is produced by currents of greater or less strength. It is preferred to use a light mirror attached to the indicator; a beam of light is thus

produced, which beam produces a luminous spot on a graduated screen.

14th Various apparatus "for rapidly producing and for maintaining electric currents of stated strengths in telegraphic wires, and for discharging currents from such wires."

15th. Certain "arrangements for throwing the receiving instrument at the transmitting end out of circuit during part of the time during which a signal is being transmitted from that end."

16th. Means and apparatus for "compensating the effects produced on the receiving instrument at the transmitting end by operations performed at that station."

17th. A method and apparatus for transmitting signals in opposite directions at the same time.

18th. "The use, for receiving and recording signals, of two or more instruments at or near the same station, thrown into operation during regulated intervals of time."

19th. A means of checking the motion of any moveable indicator in a receiving instrument after its indication has been read off. This portion of the invention is mentioned in the Provisional Specification, but is not proceeded with.

20th. A method and apparatus for increasing, diminishing, or regulating the stability of the indicator of a telegraphic instrument.

21st. Certain means of compensating the effect of previous signals on the telegraph wire. This portion of the invention is mentioned in the Provisional Specification, but it is not proceeded with, except so far as is comprehended under the 16th part of the invention.

22nd. A method and apparatus "for producing at a receiving station, lines, figures, letters, or symbols of given shapes." Two mirrors are attached "to the indicators of two galvanometers, at the receiving end of, and receiving currents from one transmitting station by two separate telegraph lines;" a ray of light is caused "to be reflected from these two mirrors in succession, and to be thrown on a screen, so as to give a visible effect, or by photographic or thermal influence, a recorded effect, by which any lines, figures, letters or symbols, drawn or written at the transmitting station upon an instrument adapted to give different degrees of electro-motive force to the two lines, according to the two independent variables thus dealt with may be written,

"drawn, or made visible at the receiving station." "For transmitting a line, drawing, or writing of any kind by telegraph," a third telegraphic wire is added, "which is so connected and arranged, that when the tracing point at the transmitting station is lifted from the surface on which the curve is drawn, the indicating or marking beam of light is cut off at the receiving station."

[Printed, 1s. 6d.]

A.D. 1858, February 23.—N^o 357.

NEWTON, WILLIAM EDWARD (*a communication from A. Cutting and Lodowick H. Bradford*).—"An improved process for producing photographic pictures or designs on the surface of stone or metals so that impressions may be taken therefrom by the process of lithographic printing."

"The surface of the stone after being prepared either by polishing or graining," is covered with a solution containing water, gum arabic, sugar, and bichromate of potash, exposed to the action of light, washed with a solution of soap, thoroughly washed with water and dried; it is then ready to be inked by means of a roller.

The action of this process upon the stone is as follows:—The sugar deprives the gum arabic solution of its power to adhere firmly to the surface of the stone until it has been subjected to the subsequent processes. The exposure to light, by its action upon the bichromate of potash, causes the gum to adhere to the stone upon those parts of the picture where lights appear. The application of the solution of soap removes the gum from those parts which have been protected from light, and leaves an insoluble soap in place of the coating removed; the gum still adheres to those parts which have been fixed by the access of light. The gum is entirely removed by the thorough washing with water, and the insoluble soap forms "the groundwork from which the picture is printed, as in the ordinary lithographic process."

[Printed, 4d.]

A.D. 1858, February 27.—N^o 396.

CLARK, WILLIAM (*a communication from M. Niepce de St. Victor*).—(*Provisional Protection only*.) "Improvements in pre-
No. 20.

“paring paper for and in obtaining photographic proofs or impressions.”

The method of preparing the paper “is based on the property that all bodies have of absorbing a greater or less quantity of light.” This new photographic process is called “photography by absorption of light.” To produce a positive picture, a sheet of paper is kept in the dark for a certain time, immersed in a solution of “azotate of oxide of uranium” (or other salt of oxide of uranium), dried, and impressed with the photographic image. The picture is then developed by means of a solution of “azotate of silver,” and fixed by immersion in pure water, “which dissolves all that part of a salt of oxyd of uranium which by reason of the dark parts of the negative proof have not received the action of light.”

When it is desired to give a black tint to a photograph of the above description, either chloride of gold solution may be applied to it after the process just described, or bichloride of mercury solution may be applied between the exposure to light and immersion in nitrate of silver solution. Chloride of gold may be used to develop the image instead of nitrate of silver; in this case the proof has a very dark blue tint.

Negative impressions are produced by placing “a sheet of paper impregnated with salt of uranium” in the dark.

This process is adapted for use on glass by means of a gelatinous or gummy solution of “azotate of uranium,” which is insoluble when exposed to light.

This process is simple and rapid, and gives more stable photographs than the ordinary process.

[Printed, 3d.]

A.D. 1858, March 22.—N° 590.

BROOMAN, RICHARD ARCHIBALD (*a communication*).—(*Provisional Protection only*.) The title of this invention is, “Improvements in apparatuses for exhibiting daguerreotype, photographic, and other stereoscopic views and pictures.”

“These improvements consist in arranging inside a box, case, or chamber an endless belt or apron having a series of frames or slides to receive views and pictures attached to it, in such manner as to stand perpendicular to its face. By moving the

"belt through a handle outside the box the pictures are presented successively in a vertical or other suitable position opposite to magnifying glasses, or other transparent media, or to suitable openings. By arranging the pictures at right angles to the face of the endless belt or chain, a larger number of pictures may be contained and exhibited in a box or case of a given size than by the arrangement of the same parallel with the face of the belt, as is usual in moving panoramas." The pictures are secured "in the slides by means of elastic bands and notches formed in the ends of the grooved portions of the slides."

[Printed, 3d.]

A.D. 1858, March 22.—N° 591.

MANWARING, EDWARD JOHN.—"Improvements applicable to stereoscopic apparatus."

This invention "consists in the application to or combination with the stereoscope, or apparatus for exhibiting stereoscopic, photographic, or other similar views, of a system of rollers, whereby views produced or placed upon flexible material may be wound, unwound, and rewound upon or from such rollers, so as to be brought up to and taken away from sight by acting upon the said rollers, without the trouble of taking away each separate view and putting another in its place, as heretofore practised."

The Drawings show a box or case containing the apparatus to be attached to the bottom of a stereoscope. Two rollers, worked by a pulley and driving band, receive the band of views; two other rollers keep the views flat for observation. The driving pulley is actuated by a knob or handle outside the case, and the rollers are suffered to turn one way only in consequence of a catch and spring on each roller. Each roller can be unshipped by means of "a screw, which forms the axis of one end of roller, working in a socket in that end of said roller."

Transparent views may be exhibited by this apparatus, transparent textile material being used.

[Printed, 6d.]

A.D. 1858, March 25.—N° 636.

CHEVALLIER, FRANÇOIS AUGUSTE.—“Improvements in
“photographic apparatus.”

The apparatus which is the subject of this invention enables the exact reproduction to be made of the entire horizon surrounding it. For this purpose it is made to revolve slowly upon a vertical axis placed under the sensitive plate, whilst the sensitive plate has a corresponding motion, so as to expose a certain portion of its surface to a corresponding point of the horizon. The sensitive plate is circular, and revolves in a vertical plane by means of toothed gearing connected with the vertical axis carrying the camera. By means of “eccentric” or radial shutters and a divided arc, a sector of any number of degrees can be photographed at once, and then another similar sector until the whole horizon is completed, or such portion of it as may be required; when, however, the whole horizon has to be taken, it is preferred “to operate with sectors of 2 or 3 degrees, imparting to the “apparatus a continuous rotary motion slow enough for the “image to be reproduced.” Auxiliary fittings contribute to the perfect working of the instrument; a divided circle upon the vertical axis enables the camera to be moved exactly through a given arc; “a magnetic or compass table” fixes the geographical position of the various parts of the photographs; and a special stereoscope, having a transparent band of silk (tinted to represent various atmospheric effects and mounted on moveable rollers) and also having internal mirrors, enables the views to be seen under various apparent circumstances.

The rollers and silk band may be adapted to ordinary stereoscopes.

The pictures obtained by means of this apparatus may be applied to fans, as they are circular and radiate towards the centre.

[Printed, 10d.]

A.D. 1858, April 5.—N° 725.

SARONY, OLIVER.—“Improvements in producing photographic
“portraits.”

This invention consists in producing a positive portrait by means of two or more negatives. A negative portrait is first

taken, "in which every portion of the figure, excepting one, is "sacrificed in order to obtain an accurate representation of that "one portion;" a second negative is taken, in which another portion of the figure is accurately taken, all the rest being sacrificed; and so on, until accurate portraits of the whole figure are taken. The accurate portions are then printed in their proper relative positions upon a positive plate, those portions sacrificed being stopped off by masks; a positive portrait is thus produced, consisting of all the accurate portions of the negatives. To prevent the stunted appearance that photographic portraits usually have, in the positive picture the head is placed "somewhat further "from the waist than it appears in either of the negatives."

These improvements "may also be effected by taking up the "different portions of the collodion film from the glass of one or "more negatives and laying them down on a glass or in the "printing frame in the positions above described, and then "printing from them without masks."

When all the portions of the portrait have been thus printed in, "the portion of the figure between them is drawn in by an "artist."

[Printed, 3d.]

A.D. 1858, April 10.—N° 780.

POUNCY, JOHN.—(*Provisional Protection only.*) The title of this invention is, "Improvements in the production of photographic pictures."

The inventor states:—"According to my invention I prepare "the paper or other surface for having the picture produced on "it, by applying over its whole surface the coloring matter which "is to form the picture, and together with this coloring matter "is applied a substance which is acted on by the light. The "following is the manner in which I proceed when printing positive pictures on paper from negative pictures:—I coat the paper "or surface which is to receive the picture with a composition of "vegetable carbon, gum arabic, and bichromate of potash, and "on to this prepared surface I place the negative picture, and "expose it to the light in the usual way, afterwards the surface "is washed with water, which dissolves the composition at the "parts on which the light has not acted, but fails to affect those

“ parts of the surface on which the light has acted ; consequently,
 “ on those parts of the surface the coloring matter remains in the
 “ state in which it was applied, having experienced no chemical
 “ change. Sometimes for the vegetable carbon I substitute
 “ bitumen, or other coloring matter may be employed. By this
 “ process pictures are obtained which are not liable to fade like
 “ ordinary photographs.”

[Printed, 3d.]

A.D. 1858, April 13.—N° 794.

DEAN, GEORGE ALFRED HENRY.—(*Provisional Protection only.*) “ An improvement in stereoscope’s slides,” “ whereby the
 “ figures on the slide may have movement and motion imparted
 “ to them. This is managed by first taking your stereoscopic
 “ background, and then taking your figures or groupings. The
 “ figures required to move are cut out and affixed in their position
 “ on the slide by a shaft running at the back of slide with shafts
 “ or arms passing through passages cut through the cardboard
 “ of slide, to which arms or shafts the figures required to move
 “ are affixed by either wire, thread, gum, paste, or any other
 “ adhesive or sticking substance ; a mechanical motion is thus
 “ obtained and given to the figures or groups of figures by the
 “ shaft being pulled at will up or down, backwards or forwards.”

[Printed, 3d.]

A.D. 1858, April 20.—N° 860.

DEROGY, EUGENE.—“ Improvements in instruments and apparatus applicable to photographic purposes.”

This invention consists of a new system and combination of lenses and diaphragms in the usual lens holders or mountings of photographic cameras.

By means of certain adjustments, arrangements, and rearrangements of the lenses and diaphragms the same results are obtained “ which now require the powers and use of at least 3
 “ separate instruments or sets of apparatus.” Also representations may be taken “ on a larger or smaller scale by lengthening
 “ or shortening the focus ;” they may also be taken instantaneously.

The peculiarities of the instrument may be set forth as follows :—

The tube forming the body of the instrument is made so that the usual cell and diaphragm holder is removeable therefrom so as to be placed at either end of the said tube; certain lenses and diaphragms are thus placed in the centre of the tube from either end of the said tube. The cap covers the exterior end of the tube when the above-mentioned cell and diaphragm holder with the sun shade is placed in the end of the tube that is inserted in the camera. To fix the cell and diaphragm holder, as well as a lens cell used for portraits, a bayonet joint is used. Two extra lens cells may be placed in the usual cell and diaphragm holder; one when the representations are required smaller, the other when they are required larger than the above-mentioned combinations can give. The combination of ten foci in one apparatus.

[Printed, 7d.]

A.D. 1858, April 21.—N° 875.

TALBOT, WILLIAM HENRY FOX.—“Improvements in the art of engraving,” in which photographic processes are used.

In the first place a mixture of gelatine with bichromate of potash is poured upon a metal plate prepared for engraving; this is left to dry, placed in the photographic copying frame in contact with the object to be copied, and exposed to the action of light so as to produce a photographic impression on the gelatine; thus far the process is identical to that described in N° 565 (A.D. 1852).

The novelty of the present invention consists in the mode of etching the image obtained as above; this is done as follows:—The picture is not washed, but as soon as it is removed from the copying frame it is covered with pulverised copal or other resin. This powder is melted by heating it strongly over a lamp. When the plate has cooled it is etched by means of a nearly saturated solution of perchloride of iron in water; the etching being accomplished in consequence of the perchloride solution penetrating the gelatine wherever the light has not acted upon it, but refusing to penetrate those parts upon which the light has sufficiently acted. “When the etching is effected the etching liquid is washed off with a rapid current of cold water” and the plate is cleaned.

Another mode of etching the image consists in washing the image (when taken out of the copying frame) with a mixture of water and spirits of wine, and then with spirits of wine alone. The plate is dried, dipped into warm water, and dried again; the

powdered resin is then put on and the rest of the process conducted as described above, but with etching liquid more diluted with water. This mode of etching the image is only mentioned in the Provisional Specification.

The perchloride of iron may be employed for ordinary etching.

Another part of this invention, only detailed in the Provisional Specification, is as follows :—A metal plate is engraved or etched all over, so that it will print a dark and uniform shade upon paper; it is then covered with a mixture of gelatine and bichromate of potash, impressed with a photographic image, and washed as above described, so as to expose the etched surface of the metal at those parts on which the light has not acted. An impression of the plate is then taken on a slab of warm gutta serena, this impression is made conductive of electricity, and an electrotypes etching is obtained therefrom. “By a nearly similar process a photographic etching may be made upon the surface of the stones usually employed for lithography.”

The processes here described are named “photoglyphic engraving.”

[Printed, 5*d.*]

A.D. 1858, May 7.—N° 1027.

COGGAN, GEORGE BARTLETT.—(*Provisional Protection only.*)
The title of this invention is, “A new portable apparatus to be called a ‘Stereoscopia,’ for exhibiting stereoscopic pictures.”

The inventor states :—“This invention consists of a square platform mounted on wheels for transit from one place to another, having a box or case about two and a half feet square and about seven feet high securely fixed thereto, the aforesaid box or case having a glass top either ground or otherwise. At the front and back of said box or case I propose inserting two or more sets of lenses, and in the interior I place a cylinder of wood or other suitable material extending from side to side, having an axis at each end, upon one of which I place a winch handle for the purpose of changing the subjects. The lower portion of this apparatus I propose using to contain and for conveying photographic apparatus.”

[Printed, 3*d.*]

A.D. 1858, May 21.—N° 1136.

BRYER, STEPHEN.—"Improved instruments to be used in the
"sensitizing and developing of photographic plates."

"For lifting the plate off the dipper (by which the plate is immersed in the bath) and transferring it to the plate frame," two pairs of forceps are used; these have two curved limbs jointed together and provided with elastic cushions at their ends, the plate is thus held firmly "by simply gripping its edges." "In order to take up the plate after it has been removed from the camera and hold it firmly while the developing and washing operations are proceeding," "the developing forceps" is used. The limbs of this forceps have attached to their ends, by loose joints, clips of L shaped metal coated inside with gutta percha. A screw and nut "after the manner of compasses" are also fitted to the forceps for retaining the instrument in a closed position. The construction of these forceps enables them to accommodate themselves to various sizes of plates and to firmly grip them.

The transferring forceps above described may also have jointed ends or clips, the said clips being discs of metal covered on their inner face with India-rubber.

"When operating upon plates of a size that could not be conveniently spanned by forceps," an instrument is used consisting of the common elastic suction holder attached to the face of a blade of wood; the said blade forms a handle for the operator to grasp at one end, and at the other end its continuation facilitates the manipulation of the plates.

[Printed, 7d.]

A.D. 1858, June 1.—N° 1230.

GRANT, ALONZO GAYLORD.—(*Provisional Protection only.*)
The title of this invention is, "A method of preparing paper, in order to render it waterproof and adapted for the reception of photographic pictures."

"Paper with or without size, giving preference, however, to that in which little or no size has been used," is dipped in or impregnated with a "composition of the following materials:—
"Asphalte, oil, turpentine, Canada balsam, caoutchouc, gum lac, and white wax, with or without the addition of chloroform."

“ The paper, coated or impregnated, may or may not be passed through rolls, and whether passed through rolls or not it is next placed in an oven or drying chamber, wherein the heat is raised to a point just below that at which the material will ignite, where it remains until it is perfectly dry ; after drying, the paper or material prepared as above described is fit for use. When to be employed for photographic purposes, it receives any of the usual preparations employed in the art to render it sensitive.”

[Printed, 3d.]

A.D. 1858, June 1.—N° 1231.

GRANT, ALONZO GAYLORD.—(*Provisional Protection only.*)
 “ An improved stand or rest for” [photographic?] “ cameras, theodolites, guns, and other articles.”

“ This stand consists of three or more legs which, when brought together, unite in the form of a cylinder. The upper ends of these legs are hinged or jointed to a metal boss, with a hole through the centre thereof. In the hollow of the boss there is a collar in the shape of a split ring, and through this collar passes a shaft carrying at top a table or other holder, according to the nature of the article to be held or supported. To the inside of each of the legs one end of a rod is connected, while the other end of each rod is connected to a collar through which the central shaft passes. When folded up, the rods lie in a groove made for their reception inside the legs. In order to fix the table or other holder at any required height, the split ring is made to grasp and nip the central rod by a screw passing through the side of and worked from the outside of the boss.”

[Printed, 3d.]

A.D. 1858, July 3.—N° 1501.

SARONY, OLIVER.—“Improvements in treating and coloring photographic pictures.”

The object of the process which is the subject of this invention is to imitate paintings upon ivory by means of paper photographs, to which a medium is applied, “ which penetrates the paper, destroys its opacity, and allows the artist’s work to appear

"floating within the substance of the paper. This appearance is obtained by the following method :—The paper on which the photograph has been taken is stretched on a frame having a moveable panel, so that the back of the photograph picture may be uncovered when required without unstretching. The photograph is then colored in the ordinary way with water colors on the front side until the picture is worked up to the required finish; the panel at the back is removed, the photograph picture is then placed face downwards upon a hot metal plate, the back is then, by a brush, covered all over with melted bees'-wax until the paper is perfectly saturated and the wax appears at the other side."

"The photograph picture may now be mounted like any piece of ivory upon a light or cream-coloured ground of paper, enamel, or other substance."

A similar effect may be produced "by using oil, varnish, or gum, to give a semi-transparency to the paper."

[Printed, &c.]

A.D. 1858, August 16.—Nº 1866.

CHAPPUIS, PAUL EMILE.—"Improvements in stereoscopes and "stereoscopic apparatus."

1st. "Making a folding stereoscope in the form of a book." The back of the instrument is made with a double hinge in the centre, so as to form, when shut up, the back and sides of the book. "The lenses and divider or partition fold inwards," and the frame supporting the picture is made to slide in a groove in the back of the instrument so as to lengthen or shorten the focus. To open the stereoscope a spring in front of the book is pressed, the sides are expanded, the lenses raised to a vertical position, and the partition raised until the top corner fits into a slit in the upper part of the lens frame; the inverse operations close the instrument.

2nd. "Another form of portable folding stereoscopes consists of an oblong box resembling a color box with a sliding lid. "When the lid is removed it is turned over and slid into grooves made in the sides of the box, and the divider which is laid flat is raised up; the focus may be adjusted by shifting the lid on which the picture rests."

3rd. The "improvements in stereoscopic apparatus consist of a box or case for presenting the slides or pictures for exhibition through the lenses." The slides are retained in slips of wood glued to an endless band; the band is stretched over rollers which are caused to revolve by means of a thumb screw. "When the slides have been presented to the glasses they fall into a bag or other suitable receptacle, and are to be replaced in the slips. This apparatus may be used with any ordinary stereoscope, or with the folding sort herein-before described."

[Printed, 7d.]

A.D. 1858, October 11.—N° 2262.

ENGLAND, JOHN.—(*Provisional Protection only*.) "Improvements in apparatus for cleaning the plates used in photography."

This apparatus "is for the purpose of providing greater facilities for holding the glass plates used by photographers." The glass plate is fixed on the ordinary pneumatic sucker. The apparatus consists of a frame supported on a suitable table, which also carries a pair of clips worked by a right and left handed screw. The frame carries and supports the glass at the same time that the clips hold the pneumatic sucker firmly. The top surface of the frame "is provided with india-rubber," "on which the glass rests in a horizontal position, and is favorably placed for being operated upon."

The parts forming the table are provided with hinges, so as to be capable of being folded up.

[Printed, 6d.]

A.D. 1858, October 14.—N° 2295.

BAXTER, GEORGE.—"Improvements in coloring photographic pictures."

This invention "consists in combining with photographic pictures the processes of intaglio, plate, and surface printing, and also the processes of lithographic and zincographic printing as a means of coloring such photographic pictures."

"To color photographic pictures by means of wood blocks,"—As many positives as it is desired to use blocks in coloring are taken from a negative on to transfer paper, the said negative

having two dots for each block. The surfaces of the wood blocks are coated with flake white and gold size, then with transfer varnish. A positive, marked with a composition of vermilion, mastic, varnish, and turpentine on the parts to be coloured by one of the blocks, is laid on one of the prepared blocks, and the marking transferred to the surface of the block by pressure. When the transfer varnish has hardened, the paper is washed off by means of dilute acid, "the marking or drawing remaining on the block." "The marked blocks obtained in this manner are engraved by hand in the usual manner." Register is obtained by puncturing the sheets to be printed with holes exactly corresponding with the dots on the negative, the said holes being placed over two register points on the tympan of the press. Stereotype plates may be used instead of wood blocks.

"To color photographic pictures by means of intaglio engraved plates."—Tracings, one for each colour, are transferred to a series of copper plates, and each plate is engraved in accordance with the tracing. Register is obtained in a similar manner to that above detailed, the dots being traced on to the copper plate and points let in where the dots are; the sheets to be printed have corresponding holes, which are placed over the points.

"To color photographic pictures by means of lithographic stones or zinc plates."—The parts to be coloured with each tint are drawn in transfer ink on a series of photographs printed on lithographic transfer paper. The pictures are printed in succession, until they are completely colored, with the stones or plates to which the pictures are transferred. The register is obtained in the usual manner or by means of dots. Another method of operating consists in transferring tracings to the stones or plates, and making the drawing for the different tints on the stones or plates themselves.

[Printed, &c.]

A.D. 1858, October 20.—N° 2342.

STORTZ, PHILIP CHRISTIAN.—(*Provisional Protection only.*
"Improvements in the materials of photographic plates.")

This invention "consists in substituting prepared copper or
"other metal plates, pannels of wood, millboard, canvass, or
"other materials having oiled or varnished surfaces, such as

“ usually used for painting upon in oil, for the ordinary materials upon which photographic images are deposited or printed, and for producing photographic images or pictures direct from the object, with or without printing from a negative.

“ The prepared surface of the said plates, pannels, millboard, canvass or other materials is first cleared of all oil or varnish glaze. The edges of the said plates, pannels, millboard, canvass, or other materials are then hermetically sealed, and the surface prepared in the ordinary manner so as to render it susceptible of receiving photographic images by means of the photographic process, and the process is carried on in the usual manner, except that the chemical ingredients in ordinary use for the purpose are varied in their proportions so as to adapt the process to the particular nature or character of the said plates, pannels, millboard, canvass or other materials.”

[Printed, 3d.]

A.D. 1858, October 23.—N° 2367.

STORTZ, PHILIP CHRISTIAN.—(*Provisional Protection only.*)

“ An improvement for taking life-size pictures from smaller pictures, either with or without the aid of photography.”

This invention “ consists in taking and tracing life-size pictures from smaller negative or positive pictures in the most simple manner.

“ Place a double or single lens with camera so that the lens is turned in a dark room; place a transparent positive or negative image against the daylight. In the dark room is placed on an easel a cardboard, canvas, glass, or paper, on which will be seen the image on a large scale. If the image is negative take Indian ink or any color, pencil, or chalk, and fill up all white lines and designs, which, when seen in daylight, will produce an exact image of the smaller one. If it appear positive on the canvas, take the same ink or color, but do only the outlines, which will produce the same effect; or in rendering the surface of the said cardboard, canvas, glass, or paper sensitive to light, an image by photographic means may be produced.”

[Printed, 3d.]

A.D. 1858, October 27.—N° 2391.

BEAU, ADOLPHE PAUL AUGUSTE.—"A pocket stereoscope."

The lens frame is attached to two covers or flaps, "so as to resemble a small pocket book or note book." The flaps have pockets on the inside to carry small articles, or "even the stereoscopic views." When the instrument is in use, it is held by means of the flaps or covers, which are, for this purpose, thrown backwards; a moveable diaphragm is also then let into a groove in the lens frame, so as to project at right angles from it, and thus separate the field of view of each lens. The eye pieces may be formed of a "spiral" [helical?] spring, covered with leather, so as to shut off the external light from the eyes. The diaphragm may slide within a sheath, by which means it may be lengthened or shortened. "The stereoscopic views may be held at the end of the diaphragm by any suitable arrangement."

Instead of the above-described arrangement, the lens frame may simply slide within a sheath, "which serves for a handle when the latter is pulled out and the instrument in use, or a handle may be attached to the frame itself."

[Printed, &c.]

A.D. 1858, October 29.—N° 2425.

JOHNSON, JOHN HENRY (*a communication from Gaspard Felix Tournachon, called Nadar.*)—(*Provisional Protection only.*)

"Improvements in photography, and in the apparatus connected therewith."

"This invention relates to an entirely new system of photography, whereby photographic bird's-eye views of portions of the earth's surface may be taken, and consists in fitting a photographic camera in a vertical position, with the lens downwards, into the bottom or side of the car of a balloon, such car being formed, when requisite, into a 'dark chamber,' by surrounding or enclosing it at the upper part with black silk or other fabric, and covering or closing the space or chamber so formed by a moveable roof or ceiling of yellow silk, or other fabric for the purpose of obtaining the required yellow or negative light. The lens is covered or uncovered in a ready

“ manner by means either of a lever attached ” [attached ?] “ to the car, and worked by a cord, so as to bring or remove a cap or cover over or from the lens, or if preferred, a horizontal disc turning on a vertical axis, may be employed for that purpose.

“ Photographic views may thus be readily taken of the subjacent plane either during the passage of the balloon, or when anchored and maintained stationary at an elevation in the air, for which latter purpose three ropes are employed, extending from the balloon to suitable windlasses below.”

[Printed, *3d.*]

A.D. 1858, November 4.—N^o 2468.

BAGGS, ISHAM.—(*Provisional Protection only.*) “ Improvements in telegraphing by electricity;” in one of these improvements photography is employed.

This invention “ consists in the employment of a fixed microscope, telescope, or other optical power or instrument in combination with an instrument or apparatus for indicating currents or effects produced in telegraphing by electricity, whether needle instrument, or an instrument in which movements or signs are capable of being produced or exerted by electricity, howsoever obtained or applied, and whether the electricity be frictional, voltaic, or otherwise.”

In carrying out this invention, “ the chemical agency of electricity ” is preferred to be used, “ as acting upon particles of matter, and not upon masses, and being thereby practically independent of the opposing forces of inertia and friction.” Various illustrations of this mode of operating are given.

Another part of this invention relates to the generation of gas by electricity for telegraph purposes, “ under a vacuum, or partial vacuum.”

Another part of this invention “ consists in the application of photography conducted by any suitable means whatever, to impress upon paper, glass, or other material the required telegraphic communications.”

[Printed, *3d.*]

A.D. 1858, November 20.—N° 2644.

SWAN, HENRY.—(*Provisional Protection only.*) "Improvements in stereoscopes and other optical instruments, and in "stands or supports for stereoscopes."

The "standard" connecting the "stage" of the stereoscope with the lens frame "is for the purpose of adjustment divided transversely into two parts, and in one of these parts two projecting wires or prongs are fixed, and these enter corresponding "holes in the other part. The holes are lined interiorly with "cloth, so that sufficient friction may be offered to the sliding of "the prongs in the holes, to retain them in any position in which "they may be placed. When the instrument is in use it is held "by a button attached to the lower part of the standard, and the "adjustment of the distance between the picture and the glasses "is effected by placing the end of the thumb in a recess formed "in the upper portion of the standard, and moving it up or down "till the proper distance is found." To render the instrument more portable, the "standard" may be attached to the "stage" and to the frame of the glasses "by hinges furnished with springs "similar to the springs of a pocket knife."

A method of arranging opera glasses is set forth.

In arranging stereoscopes, the partition is formed of ribbed glass or other transparent or translucent material.

In the ordinary stereoscope, instead of the single reflector usually employed, a series of narrow reflectors like a Venetian blind is used.

"In arranging stands or supports for stereoscopes two (or other "number of) series of levers, parallel the one to the other, and "arranged on what is known as the 'lazy-tongs principle,' are "employed." "The height of the stand or support is adjusted "by altering the angle, which the levers of each pair make with "one another."

[Printed, &c.]

A.D. 1858, December 20.—N° 2909.

MACLEHOSE, ROBERT.—(*Provisional Protection only.*) "Improvements in stereoscopes."

The stereoscope described "is in the form of a deep rectangular No. 20.

“ box, fitted at one end, near the top, with the usual stereoscopic glasses.”

An open drum or roller is placed “ in the line of sight, and between the glasses and the extreme back of the box or case.” This drum works “ upon a horizontal spindle, to which is attached a projecting handle for turning it by. Behind this drum or cylinder and in the end of the case there is a hinged door, folding downwards, and fitted with a mirror for throwing light into the interior of the case. The pictures are disposed in the chain form over the drum or roller, and so arranged that one end of the chain can fall down into the bottom of the case at the front and the other at the back portion of the case. With this arrangement, as the drum is turned, the pictures are successively drawn up from the back section of the bottom of the case, passed over the faces of the drum, on the vertical side of which for the time being, they are successively displayed, and then passed down in a zig-zag or regularly folded pile in the bottom of the front portion of the case.” If necessary, two persons can see pictures at once by means of stereoscopic glasses fitted “ on the top of the back part of the case, to look in the reverse direction of the fixed glasses. The sight is, in this instance, directed upon a mirror,” which receives “ the image from the pictures upon the drum beneath it.” There are also mirrors and side doors to improve the effect of the light.

“ After a picture has been seen and passed on, it can at once be brought back, if necessary, and any picture seen by one viewer can be passed on to be seen by the other.”

[Printed, 8d.]

A.D. 1858, December 27.—N° 2961.

MARION, CLAUDE MAMÈS AUGUSTIN.—“ An improved box or case for containing and preserving sensitive photographic paper, called ‘ Marion’s box.’ ”

This invention “ consists of a box with a double bottom hermetically closed, and containing in the one part chloride of calcium, and in the other the paper to be preserved.”

The first arrangement consists of a rectangular box, “ divided into two parts by wire gauze, the upper part of the box containing the paper to be preserved, and the lower part containing

“ a drawer in which is placed chloride of calcium;” the lid of the upper part of this box is hermetically closed by means of a strip of India-rubber.

The second arrangement consists of two rectangular boxes placed one on the top of the other; the upper one contains the paper to be preserved, the lower one the chloride of calcium. The upper box is made in a similar manner to the upper compartment of the first arrangement, it has, however, a perforated bottom which fits hermetically on to the lower box.

The third arrangement consists of a “cylindrical box for containing a roll of the nitrated paper, the bottom of which is pierced with holes, and forms the lid of the lower box, which is filled with the chloride of calcium.” The lid of the top box, and the upper and lower boxes are respectively joined together hermetically.

A “reservoir” of chloride of calcium, to be used separately, consists of a frame strengthened by means of divisions, and having its bottom formed of a zinc plate and the upper surface of muslin and wire gauze.

“In cylindrical boxes, the chloride of calcium may be contained in an open cylinder which would serve as a roller for the paper placed at the centre of the box.”

[Printed, 8d.]

1859.

A.D. 1859, January 7.—N^o 51.

SPENCE, WILLIAM (*a communication from Charles B. Boyle*).—
“Improvements in the mode of taking photographic pictures on wood.”

This invention “consists in a process of preparing the block and applying the silver solution thereto, by which an unchangeable picture may be produced directly upon the surface of the wood without injury to its fibre.”

The white of an egg, mixed with water, is beaten into a white froth; the face of the block is moistened with this fluid, which is allowed “to sink in and dry by natural evaporation.” An aqueous

and warm solution of Russian isinglass and chloride of sodium is then rubbed over the face of the block and allowed to sink in and dry. The underlying albumen is coagulated by heat, another coat of gelatine applied, and the excess of gelatine scraped off, sufficient friction being used to enable the silver solution to be brought into direct contact with the surface of the wood itself. The photographic impression is then made in the ordinary manner, except that it is much darker than usual. The solvent or fixing and toning solution is then applied in a heated state; the solution removes the gelatine and effaces all parts of the picture except those on the surface of the wood.

The following process may be applied to blocks which have been previously pumiced and whitened:—The albumen of an egg, mixed with salt and water, is beaten up; the mixture is then poured upon the horizontal block, and is coagulated by heat; this process is repeated until the pores are filled. The surface is then ready for the nitrate solution, and the picture is “taken on substantially the same principle as a photograph on paper.”

[Printed, &c.]

A.D. 1859, February 2.—N^o 296.

ALLEN, EDWARD ELLIS.—“Improvements in stereoscopic apparatuses.” The complete apparatus is called “a compound collapsible stereoscope.”

“The object of these improvements is to render stereoscopic apparatuses portable.”

The views are attached to one side or to both sides of a flexible band which passes round rollers. Each roller rotates in a case of its own, the cases of the two rollers being capable of sliding one inside the other; by this means, when the instrument is out of use, the cases are brought close together, but “when the apparatus is in use the cases are forcibly kept apart by flaps, rods, or otherwise,” “so as to ensure the straining of the views.”

The Drawings show another arrangement, in which the cases are cylindrical and have slits in them for the passage of the views. These cases are connected together by means of a “lazy-tongs;” they can either be thus shut together or kept apart as desired.

The stereoscope moves in slits in the case, “and is made collapsible, being kept rigid when in use by a flap” hinged on

"the piece containing the eye glasses." The following modes of fitting the stereoscope to the cylindrical cases are described and shown:—The sides and eye glasses are made to fold down close to the cylinders. The eye pieces are divided, each being attached to a "mouse-trap" spring. The eye-glass frame "is attached at either end to rods hinged on the cylinders." "A system of bars" connect the eye-glass frame and the "lazy-tongs."

Cases of glass or card slides are rendered portable by arranging the views in two piles, one on each side of the stereoscope; those from the top of one pile are successively transferred to the top of the other, and the bottom slides at the same time undergo an inverse transfer. A system of rods or levers are used for this purpose.

[Printed, 11d.]

A.D. 1859, February 7.—N° 344.

SIMS, THOMAS.—(*Provisional Protection only.*) "Improvements in the application of photography to engraving and printing."

A collodion photograph is produced "either in the wet or dry state in the ordinary manner," and is submitted "to the action of bichloride of mercury and ammonio-chloride of gold or other chemicals capable of causing the lines of the picture to swell or rise and become absorbent." "This operation is however not always necessary." The film is then covered "with a thin coat of varnish, which speedily dries on the porous raised lines or parts, leaving the other parts wet or damp." A quantity of powdered resin or other suitable powder is then dusted over the picture; this "adheres to the wet parts, and does not adhere to the dry parts." The picture can now be printed or transferred, "or otherwise converted into a printing surface or plate."

The invention further states:—"I also make electrotypes from the films prepared as above-mentioned after metallizing the surface, or rendering it a conductor of electricity. In some cases I apply plumbago or other suitable powder to the film without varnish, and it then adheres chiefly to the raised lines or parts, and can be transferred or electrotyped. Or, I thoroughly dry the film on the glass, and coat it or not with oil of turpentine or other essential oil, and then apply resin or other suitable

" powder, and fix it by heat, and I then etch the glass by hydro-fluoric acid. The glass so etched is then used for printing, or the pictures may be preserved on the glass itself."

[Printed, 3d.]

A.D. 1859, February 14.—N° 410.

SANDERS, CHARLES.—" Certain improvements in ornamenting English passe-partouts for photographic pictures, also the glasses used with the same, and which said modes of ornamenting are also applicable to ornamenting photographic frames generally."

This invention relates to "the application to the passe-partouts and front glasses of photographic portraits or pictures (either singly or combined) of ornamental designs."

The invention consists in "applying to photographic mounts the well-known process or processes of gilding, painting, staining, etching, or printing, singly or combined, the inner side of the front glass around that portion that does not intercept the picture or the moulding that surrounds it, or to ornament in like manner by any suitable means, such as by gilding, painting, staining, printing, or embossing, or either one or more of these processes combined, that portion of the front of the passe-partout that surrounds the picture before referred to."

In many cases it is preferred to produce a part of the design upon the glass and the remainder of the said design upon the passe-partout; when these come together they form the whole design and improve "the brilliancy and general effect."

[Printed, 4d.]

A.D. 1859, February 17.—N° 444.

SAILLARD, BENOIT.—(*Provisional Protection only.*) "An improved mode of obtaining printing plates from collodion pictures."

"This invention relates to the obtaining, by the aid of the electrotype process, metal printing plates from collodion pictures." A collodion photograph is developed by means of a solution containing water, pyrogallic or gallic acid, and nitrate of silver; it is then fixed by hyposulphite of soda or cyanide of potassium solution, washed, and dried. The resulting image

is treated with solution of bichloride of mercury, washed with bichromate of potash solution, and then with distilled water; "when dry, the design will appear on the glass plate in relief."

The inventor further states:—"As a protection thereto I find it convenient to coat the design with photographic varnish, but this will in a measure detract from the sharpness of the plate ultimately obtained. I next submit the design, drawing, or picture to the electrotype process for the purpose of throwing down copper or other metal thereon by electro-deposition, and I thus obtain a reproduction in metal suitable for yielding impressions in ink of the raised picture or design produced upon the glass."

[Printed, 3d.]

A.D. 1859, March 15.—N° 653.

CLARK, WILLIAM (*a communication from Victor Louis Marie Serrin*).—"Improvements in the apparatus of electric lamps or lights," applicable (amongst other purposes) to photography.

This invention relates to an improved self-acting regulator. The approach of the carbon points is "effected according to the relative wear of the carbons, so as to maintain the light in one uniform position, whereby the circuit can also be broken or re-established as often as it is wished, and the apparatus be still always in working order."

To compensate for the loss of weight of the carbon points in the proportion in which it occurs, the positive electrode actuates a train of wheelwork by its gravity combined with that of a weight; whenever the wheelwork is allowed to act (by reason of the electric current ceasing to permit the full action of an electromagnet in the circuit), the positive electrode descends and actuates a chain passing round a drum, which causes the negative electrode to ascend in a proportion to the movement of the positive electrode which is defined by the relative leverage at which their chains are attached to the said wheelwork.

The other apparatus in the lamp, combined with that above described and compensating the variation in electric force, consists of an "oscillating frame," which is acted upon by the electromagnet and sustained by a "suspension spring;" by the joint and alternate action of these contrary forces the wheelwork is fixed or liberated.

"As a permanent light this regulator can be applied to light-houses, fixed lights, optical experiments, physical and photographic purposes."

[Printed, 10d.]

A.D. 1859, April 21.—N° 1011.

PEPPER, JOHN HENRY.—(*Provisional Protection only*.) "Improvements in apparatus for showing stereoscopic pictures."

This invention consists "in so combining apparatus, that the two stereoscopic pictures shall be thrown side by side on to a screen or surface by means of lanterns having suitable lenses, in such manner that when seen by several persons through different lenses (having focal powers according to their several distances from the screen or surface) each person shall see the two projected pictures as one largely magnified stereoscopic picture. For these purposes, a theatre or room is fitted at one part or end with a suitable screen or surface to receive the two pictures thrown thereon, by two suitable lanterns, and in front of the seat for each observer is stationed a suitable standard or holder of lenses of focal powers coinciding with their distance from the two projected pictures on the distant screen or surface, by which, when looked at through such distant lenses, the two pictures will be resolved into one largely magnified stereoscopic picture."

[Printed, 3d.]

A.D. 1859, May 6.—N° 1139.

HART, FREDERIC WILLIAM.—(*Provisional Protection only*.) "Improvements in photographic apparatus."

1st. "Constructing a photographic printing frame in such a manner as to admit of adjusting thereby the negative stencil or mask on the prepared paper or surface, and securing the same thereon as required." A frame, capable of being moved in any direction over the bed on which the prepared surface is fixed, is secured in position by screws, "so as to hold the stencil on the prepared surface ready for being hinged at one end, so that the reverse side may be turned in order to inspect the picture as required in its position "without disturb-

"ing the original arrangement of the stencil mask or negative on the prepared surface."

2nd. "Constructing the said moveable frame so as to adapt it for holding tablets or surfaces to be printed from of various sizes. For this purpose a curved or other slide is adapted and applied thereto so as to be capable of being moved along the frame to the position required in order to grasp or hold the said printing tablet or surface."

3rd. "Applying vulcanized india-rubber, or other similar elastic material, to the bed or backboard for the prepared surface to rest upon, in order to facilitate the bringing of the printing and the prepared surfaces into the required close contact."

[Printed, &c.]

A.D. 1859, May 7.—N^o 1156.

JEFFERY, WALTER.—"Rendering more convenient out-door manipulations in photography, by means of an improved portable photographic tent and tent camera."

In one form of the apparatus the base "folds in two towards the under side." The sides "are formed of folding frames, and covered first with stout cartridge paper, and then with an American cloth," "to prevent the light from penetrating into the chamber." "These sides, when shut up, fall towards the base, thus the whole folds into a space of half the surface of the base." The sides of the chamber are kept apart by means of a double framework, which is hinged at either end to the said sides and fastened by means of hooks and eyes.

When the manipulating chamber is "required to be used as a camera," the following apparatus are added:—A camera front with an opening for the lens, a frame to carry the sensitive plates, and a stereoscopic camera. These are respectively made to fold down upon the base of the instrument, when not in use.

"When the tent is fixed for use, the whole of the upper part is covered by a double thickness of calico;" an apron is fixed to the front, which apron reaches to the ground and entirely covers the manipulator. The lenses are covered by means of bags with elastic rings sewn in them; these bags are fastened to the front. The lenses can be opened and shut from the interior.

When the apparatus is in use it is fixed on a tripod stand by means of battens carrying angle pieces; the battens are fixed to the base of the chamber by thumb screws.

Ventilators "made at right angles" are placed in the tent; by this means no light is allowed to enter.

Another form of framework is described and shown, which is hinged to one of the sides, and folds up against the said side.

[Printed, 1s.]

A.D. 1859, May 26.—N° 1300.

PATRICK, HUGH WILLIAM.—"A new substance or material "to be used in lieu of ivory and other like substances;" amongst the applications of this invention "photographic purposes" is mentioned.

In preparing the new material the following substances are employed, either separately or combined in suitable proportions:— "Amber, Canada balsam, the Australian gum kowrie, potato "flour or fecula," "meerschaum, paper pulp, calcined bones, "fluorate of silica, sulphide or sulphurets of mercury (vermilion) "or of other metals, chlorides of zinc or other metals, alkaline preparations, asbustos, fluxed or fritted colors, or finely powdered "pumicestone, sulphur, India-rubber, or similar gums."

"The combinations may be effected in various ways, such as by "reducing the gums to solution or 'hard bodies' or precipitates, "or by the application of heat." Where solutions are adopted, the gums employed are dissolved in "naptha, mithilated spirits, "chloroform or essential oils, or other suitable solvent." In this state of solution, or "in a state of precipitate," the gums are added to the above-mentioned substances or to such of them as may be necessary; the latter substances being in a state of powder, "or they may also be mixed with the gums whilst they are in a "state of fusion." When thoroughly mixed, the whole is evaporated "to a thick paste, and when at a proper consistency" it is rolled, cut, or moulded. "Where shaped or moulded, the "new material is hardened by the application of heat, and will "bear a very high polish."

This invention is (amongst other purposes) applicable to "photographic purposes, such as the working into sheets or tablets."

[Printed, 3d.]

A.D. 1859, May 31.—N° 1343.

WANSBROUGH, JAMES (*a communication from Egbert Mosham*).—"Improvements in the construction of stereoscopes."

This invention "relates to a mode of rectifying in the stereoscope the distortion which is common to photographs of architectural subjects, and which arises from the camera used in taking such pictures being set at an incline, in order to take in the upper portion of the view." In the photographic representation of a street, for example, made by this method, the rows of buildings appear falling forwards, "the vertical lines being at the same time elongated or thrown out of proportion." "To remedy this defect when viewing such pictures stereoscopically," the plane of the pictures may be adjusted at a suitable inclination to the axis of vision. "The optical laws on which this adjustment is based being that the apparent size of an object diminishes in proportion as it recedes from the eye, or as its distance from the eye of the observer is increased," "the want of parallelism in the vertical lines" is thereby neutralized, and the truthfulness of the representation restored.

The Drawings show a stereoscope whose bottom plate, that carries the views, is hinged to the front of the instrument, and is capable of being fixed at the required inclination by means of a spring catch bearing against the back of the case. The said back is provided with a stop, which prevents "the frame from swinging loose on its hinges."

[Printed, 5d.]

A.D. 1859, June 16.—N° 1450.

JONES, THOMAS WHARTON.—The title of this invention is, "Stereoscopic glasses for single pictures," and it relates to "a new form and arrangement of optical glasses or lenses which give a stereoscopic effect" "to single pictures of any kind," and to real objects "viewed through them with both eyes, that is one glass before each eye."

The fundamental form of the glasses is "plain on one side and concave on the other;" other glasses or curved surfaces, suitable for near or long sight, may be superadded to the above-mentioned glasses, if required. The concave curve of the horizontal section

in its fundamental form "is a somewhat cycloidoidal curve;" that of the vertical section "is parabolical."

These glasses are mounted either in spectacle frames or in double eye-glass frames, and give a dissimilar perspective of picture on each retina, "and the result is in accordance with the conditions for stereoscopic vision, the perception by the observer of a stereoscopic effect or appearance of relief in the picture."

Other forms of glasses besides that above described are capable of producing a stereoscopic effect. Glasses of the fundamental forms above described may be fitted to a binocular, opera, or field glass arrangement of the ordinary kind, and thus enable the relative position of real objects at some distance to be determined with greater exactness than is possible under ordinary circumstances.

[Printed, 6d.]

A.D. 1859, June 17.—N° 1463.

VASSEROT, CHARLES FREDERIC (*a communication from Henry Adolphe Corbin*).—"Improvements in the construction of stereoscopes."

"The object of this invention is to give the power of seeing in relief pictures of any size (according to the proportions of the apparatus) much more enlarged or amplified than can be effected by the present system of stereoscopes."

In this invention the stereoscopic pictures are separate and are inclined to one another in such a manner that one of them is viewed directly by the eye, and the other is viewed by means of a mirror placed at the bisection of the angle that the views respectively make with each other. The two views are thus made to coincide, and are viewed by means of a pair of lenses. It will be immediately perceived that by this means an angle of vision is obtained "more considerable than it is possible with the ordinary system."

Although it is preferred to place the reflected picture at right angles to the one viewed by direct vision, and to see one picture direct and the other reflected, both pictures may be seen by reflection from a mirror. When this is the case the mirrors make equal angles with the axis of vision, and the pictures are placed at a suitable angle, the angle of each picture with the mirror reflecting it being the same.

The Drawings show a box made according to the above principles, which is covered by rough glass or a removeable opaque lid so as to regulate the light. By cutting out the partitions at the back of the pictures and closing the lid, transparent pictures may be shown.

The picture viewed in the instrument by reflection must be taken "inverted," or with its unprepared surface towards the object.

[Printed, 9d.]

A.D. 1859, June 25.—N° 1527.

NEWTON, WILLIAM EDWARD (*a communication from J. Stuart Perry*).—"Apparatus for exhibiting stereoscopic pictures."

This apparatus consists of "a movable framework for holding a series of stereoscopic pictures, from which the pictures are brought to be inspected, and then returned to it again by a mechanism operated by the user."

The instrument shown in the Drawings consists of a cylindrical drum mounted on a centre. The views are placed in radial compartments of the drum, and each picture or pair of pictures is brought in succession underneath a vertical frame into which it is projected from its compartment to be exhibited.

The action of the apparatus is as follows :—The rotation of the driving spindle, by means of a hand winch, moves one picture underneath the vertical frame for every revolution of the spindle; a tooth for this purpose gearing into a cog wheel fixed on the drum axle. The picture is then risen into the frame by the half-revolution of a crank on the driving axis, and depressed into the box by the other half-revolution of the crank; the tooth then brings another picture under the vertical frame, which is in its turn elevated and depressed, and so on. The centre on which the drum revolves is fixed by means of a friction brake during the movement of the views into and out of the vertical frame.

The carrying frame that catches each picture in succession is moved by the action of the crank in a horizontal slot.

One or two lens frames are placed opposite to the picture, to produce the stereoscopic effect; when two frames are used, one is placed on each side of the pair of pictures.

[Printed, 7d.]

A.D. 1859, July 12.—N° 1653.

PROAL, CAMILLE JOSEPH (*a communication from Jules Bernard*).—"The application of photographic impressions or pictures upon fabrics or tissues for rendering such fabrics or tissues applicable to various useful purposes."

This invention consists "in applying to oilcloth, glazed cotton, leather, and other fabrics or tissues, one or more photographic impressions, and employing the fabrics thus prepared for making up pads for writing blotters, chimney fronts, table covers of any form, lamp and other stands, portfolios, purses or money holders, tea trays, covers for books and journals, and other similar articles, and more especially such articles as boxes, and objects of cardboard. The fabrics having received photographic impressions may be ornamented with gilt thread, or gilt decorations of any kind, and enriched by designs of various colours appropriate to the photographic subjects."

"The photographic pictures may represent views, portraits, monuments, battles, or other photographic reproduction; they may be colored or not colored, ornamented or not ornamented with decorations. A varnish may at option be applied over the photographic impressions to preserve their duration and brilliancy."

[Printed, 3d.]

A.D. 1859, September 3.—N° 2020.

SWAN, HENRY.—(*Provisional Protection only*.) "Improvements in stereoscopes and stereoscopic pictures."

The inventor states:—"According to my invention I construct stereoscopes with prisms or lenses of different magnifying powers, that is to say, the prism or lens opposite one eye exceeds in magnifying power the prism or lens opposite to the other eye, and I use such instruments in conjunction with pictures in which the two views forming the stereoscopic combination are of different sizes, corresponding with the different powers of the prisms or lenses opposite the two eyes, and these pictures according to my invention, I connect together by attaching them both in suitable positions to the same mounting. In this manner, by the use of the large picture only, I am

“ enabled to obtain stereoscopic effect combined with minuteness of detail, such as a large picture alone can give ; and am also enabled to arrange the instrument in a form which is much more convenient than that of the instruments heretofore employed for viewing large pictures. In some cases I construct instruments having one prism or lens only, the large picture being then seen without the aid of a prism or lens.

“ Magnifying mirrors may be employed in place of prisms and lenses, but not so advantageously.”

[Printed, 3d.]

A.D. 1859, September 8.—N° 2050.

SMALL, THOMAS OSWALD.—The title of this invention is, “ Improvements in the stereoscope by means of tinted media, and by the application of the pulley and lever or spring in changing the lights.”

The inventor states :—“ My invention consists in the first place in the substitution of coloured or tinted glasses or other tinted media in place of the uncoloured glasses or other substances heretofore used for the purpose of reflecting light in stereoscopic slides ; and, secondly, in the application of a pulley or lever for the raising or depression of such media, by the use of which coloured or tinted glasses, or other tinted media, assisted by the said pulley or lever, I am enabled to throw upon stereoscopic slides every degree and variety of light which may be required.”

[Printed, 3d.]

A.D. 1859, September 12.—N° 2081.

COLLINS, HENRY GEORGE.—1st. Certain improvements in producing printing surfaces and in transfer inks.

2nd. “ The application of india-rubber in obtaining printing surfaces from enlarged or reduced photographic images.” A mixture, containing water, gum arabic, bichromate of potash, and sugar is applied to the surface of a sheet of vulcanized India-rubber, and a photographic image is produced thereon in the ordinary manner. “ In order to bring the photographic image to the size desired,” the sheet of India-rubber is either extended or allowed to contract, and the sensitive coating is transferred “ on

"to a stone, metal, or other surface." The coating is then washed with a mixture of gum arabic, yellow soap, and water, "which removes the portions of the coating unchanged by the light." The surface is then inked and printed from "as is usual in lithographic printing." Another method consists in producing the photographic image directly upon a stone or other printing surface covered with the above described sensitive coating, washing the surface with mucilage, charging it with ink, and transferring the same to a sheet of India-rubber which is allowed to extend or contract as may be desired; the design is then transferred on to the printing surface, "from which the copies required may be taken." The method of operating with the India-rubber is set forth in N° 439 (A.D. 1858).

3rd. Methods of producing printing surfaces.

[Printed, &c.]

A.D. 1859, September 14.—N° 2095.

BESLAY, CHARLES.—The title of this invention is, "Improvements in preparing and obtaining printing surfaces with designs sunk, as also in relief," and some of the processes set forth involve the employment of photography.

The general outline of the process constituting the improvements is as follows:—A design is drawn on a varnish-coated sheet of glass "by removing the varnish from the glass, so as to produce the design or drawing required." Increased thicknesses of the varnish are applied "at places where large blanks or whites are to appear in the print." An electrotpe is then taken of the glass plate thus prepared, and backed with lead or other suitable material; a printing surface, representing the design in relief, is thus produced. When it is required to produce a sunken design, it is drawn on the glass in varnish, so as to form a raised surface; a sunken design is then produced in the electro-deposited metal.

In order to test the effect of the design made by removing the varnish from the glass, "a sheet of sensitive photographic paper is placed on the design, the plate is then reversed, exposed to the light, & a positive proof thus obtained."

To reproduce a photograph.—The photograph is fixed on the sheet of glass, which is then coated, on the reverse side, with transparent varnish; the photographic proof is then copied

"through the transparency of the glass." "This method may be varied by covering the photographic proof on the glass with a transparent varnish. The varnish may further be first prepared, and then covered with a layer of sensitive varnish, and so obtain a proof on the glass thus prepared." A design also may be obtained by photographing a proof fixed on the glass, also by means of a paper or other proof.

Other details not photographic are also fully set forth.

[Printed, 4d.]

A.D. 1859, September 16.—N° 2112.

BECK, JOSEPH.—"Improvements in stereoscopes."

To admit light to the picture "the stereoscope is left entirely open in front and at the two sides," and a reflector of silvered glass is fixed to the back of the instrument; by this arrangement "the texture of the paper will not be prominently seen." The admission of light at the sides of the stereoscope is not an essential feature of this invention, although it is preferred.

The Drawings show a stereoscope in which the back or body of the instrument is made in two parts, one of which supports the lens frame, and the other the platform carrying the picture. The pictures are held on the under side of the platform by means of springs, hinged so that they may be turned back, and thus allow the instrument to stand flat when not in use. A screen of ground glass is attached to the middle of the platform, at right angles to the plane of the picture, so as "to limit the sight of each eye of the person using the instrument to one only of the pictures forming the stereoscopic combination;" this is an important feature of the invention. The distance between the lenses and the picture is alterable by means of a rack and pinion movement which connects the two parts of the instrument.

[Printed, 6d.]

A.D. 1859, September 28.—N° 2193.

- SUTTON, THOMAS.—"Improvements in the construction of apparatus for taking photographic pictures, consisting of and entitled 'an improved panoramic lens for taking photographic pictures.'"

No. 20.

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“ The compound lens is composed of two single thick concavo-convex lenses made of glass, the curved surfaces of which are portions of concentric spheres. They are secured to a suitable mount in such a manner and position that the curved surfaces of both of them (that is to say, all the four curved surfaces) are concentric, their common centre being a point in the axis of the compound lens, and the lenses having their concave surfaces opposite to each other. In the space or cavity between the concavo-convex lenses is contained a transparent fluid of lower refractive and dispersive power than the glass of which the lenses are made.” “ The two glass lenses may be made of the same kind of glass, and equal in all respects;” or they may be made of different kinds of glass, having suitable radii in order to correct the compound lens for colour and for spherical aberration. To give sharp definition when objects at different distances from the lens are included in the view, a diaphragm of suitable size is placed between the lenses, within the fluid, at the centre of the compound lens.

The photographic pictures taken with this lens “ should be produced upon tablets, forming either a segment of a sphere or a segment of a cylinder so placed in the camera as to have the same centre as the curved surfaces of the lenses.”

The Drawings show the two lenses mounted in a zone of brass, which slides in the boss of the usual mounting.

In the Provisional Specification it is proposed to use a conical box, open at each end, fitted with plane partitions, to supply the place of the above-described central diaphragm.

[Printed, 6d.]

A.D. 1859, October 3.—N^o 2238.

EARLE, WILLIAM RICHARDSON, and BARNES, EDWIN JOHN.
—(*Provisional Protection only.*) The title of this invention is, “ Improvements in photographic and other portraits.”

The inventors state:—“ Our invention of improvements in photographic and other portraits relates to the application of some of the hair of the person, of whom the portrait is a representation, to the portrait in the position and in the natural manner of the hair of that person or otherwise, or it may be of the hair of any other person or kind.

" In its application to photographic portraits, I cement the
 " hair to the front or back of the material on which the portrait is
 " taken, if that material is transparent it must however be in
 " front in cases where the material is opaque.

" We also apply hair in like manner to oil and other painted
 " portraits to enhance the effect and produce greater re-
 " semblance.

[Printed, &c.]

A.D. 1859, October 5.—N° 2258.

FISHER, ROBERT, and ASPRAY, CHARLES.—(*Provisional Pro-
 tection only.*) The title of this invention is, "Improvements in
 " photographic stereoscope slides, and in the stereoscopes em-
 " ployed in viewing the same."

The inventors state: "We take, with a single camera, two
 " photographs of the same object, but in different attitudes or
 " positions, and in the stereoscope employed in viewing them we
 " provide a sliding shade by means of which the right or left
 " hand picture is viewed alternately, by this arrangement the
 " effect of motion or change of position is produced."

[Printed, &c.]

A.D. 1859, October 19.—N° 2393.

COWPER, CHARLES (*a communication from John Henry Poin*).
 —"Improvements in photographing on uneven surfaces, and in
 " apparatus for that purpose."

" By the present invention, the focus is obtained in a direct
 " manner on the uneven surface itself by means of the apparatus
 " herein-after described, and the uneven surface is then removed
 " and covered with a coating of collodion, or other suitable
 " material, and rendered sensitive to light, and it is then replaced
 " in the camera in the same position as when the picture
 " was focussed, and it is exposed a sufficient time, and developed
 " and fixed in the usual manner."

The apparatus, as shown in the Drawings, is as follows:—A
 table at the bottom of the camera carries a plate, capable of
 sliding horizontally in "lateral grooves;" on the plate is fixed a
 vertical rod that supports a "pan holder," by means of a clamp

screw, in a similar way to that of supporting a retort, by an ordinary retort stand; a picture frame is connected with the "pan holder" by a similar supporting apparatus; the vase or other object is placed in a plastic material, with which the pan is filled. A photographic picture is taken by placing the vase in the pan with the surface to be sensitized vertical, and fixing it upon the clay, then focussing the image upon it (having adjusted the vase properly by means of the sliding plate, rod, and clamp, also the picture frame upon it by means of its rod and clamp), removing it to be sensitized, replacing it in exactly the same position, exposing, developing, and fixing it. The camera lens is fixed in a sliding box to facilitate focussing, and the picture or object which serves as the original is placed in front of the lens, at a distance from it depending upon the size of the picture desired.

[Printed, 7d.]

A.D. 1859, November 10.—N^o 2557.

MELHUISE, ARTHUR JAMES.—"Improvements in the construction of cameras for obtaining photographic pictures."

The body of the camera is made "of metal (usually of brass), the bottom, top, and sides of the body are soldered, or otherwise fixed together, and the front which carries the lens or lenses" slides in guides fixed to the sides of the body," so that the position of the image can be thereby adjusted "before taking the picture," and the front "may be entirely removed from the body of the camera for convenience of packing the slides therein." The lens may be mounted on a tube fixed to the front, thus reducing the depth of the camera as much as possible. The "dark slide" is introduced into the camera in the usual manner, but the slide is drawn down through a slit in the bottom of the camera in order to expose the sensitive surface when taking a picture; the said "dark slide" is made entirely of metal, and the front slide thereof, when closed, is secured by bolts; spring handles are fitted to the "dark slide" for the convenience of packing. The "dark slide" may be made double, "to receive two sensitive plates or surfaces back to back;" "for this purpose both sides of the case slide out to expose the sensitive plates or surfaces, and the top of the case or slide also slides out to allow the plates or surfaces to be put in. The ground

"glass used in focussing is mounted in a metal frame, that it may frack" [pack?] "into as small a space as possible."

The Drawings represent a camera of the above description with two lenses, in order to take stereoscopic pictures. In this case there is a partition that separates the images, which partition takes out "in order that the dark slides and focussing glass may be packed away in the interior of the camera."

[Printed, 1s. 1d.]

A.D. 1859, December 5.—N^o 2755.

NEGRETTI, ENRICO ANGELO LUDOVICO, and ZAMBRA, JOSEPH WARREN.—(*Provisional Protection only.*) "Improvements in stereoscopes," to render them portable.

"The instrument is composed of a shallow rectangular box, capable of containing from six to eight or more stereoscopic pictures, together with the eye-piece of the instrument, which, with the pictures, is covered in the box by a moveable lid, provided with flexible bands or other convenient attachments, whereby the lid or cover may be temporarily secured to the box. When the instrument is required for use, the moveable lid or cover is to be fixed in a vertical position across the centre of the box, in notches made therein for the purpose. The eye-piece has a notch or groove cut across the middle of it on the under side, and is fixed on the top edge of the vertical lid which fits into the notch on the under side of the eye-piece, the vertical lid thereby forming a support to the eye-piece, and also forming a central vertical division between the line of sight of the two eyes. The pictures are made much smaller than usual, and when the two views which form a stereoscopic picture are placed side by side, their edges are made to touch;" the junction line is hid beneath the edge of the vertical lid. "By making the pictures without any margin round them, the instrument may be reduced in size without materially or injudiciously increasing the minuteness of detail in stereoscopic views or pictures."

[Printed, 8d.]

A.D. 1859, December 19.—N^o 2891.

SMITH, JOHN.—"Improvements in the manufacture of composition jewellery and ornaments, and in cases for jewellery, photographs, and for other similar purposes."

This invention consists in the production of the above-mentioned articles "from a composition or plastic material not hitherto used for these purposes, and in the process of preparing the said composition."

To make a black composition, certain proportions of shellac, ebony dust, "black asphaltum," and ivory black or charcoal powder, or lamp black, are used. The melted shellac is mixed with the ebony dust, and the other materials added as colouring matter.

To make a chocolate-coloured composition, "brown asphaltum" is used in place of the black asphaltum, and ordinary rouge is added "according to the tint required."

"To produce greens, blues, or other dark colours," any suitable colouring matter is employed in proper proportions.

For light colours, dust of boxwood is used as a principal colouring agent, "to which, if still lighter tint be required, a more intense white in the shape of pigment may be added."

These ingredients may either "be thoroughly amalgamated" so as to produce an even colour, or masses of differently coloured compositions may be twisted or rolled together so as to produce "imitation marbles, onyx, malachite, or other stones."

To manufacture the article required, a lump of heated composition of sufficient size is placed in suitable dies, and "the article is completed by pressure."

[Printed, 3d.]

A.D. 1859, December 28.—N^o 2962.

ROSTAING, CHARLES SYLVESTER.—"Improvements in combining and mixing gutta percha with mineral and vegetable substances capable of altering its quality in such a manner as to produce hard, resistant, unalterable, and imputrescible compounds diversely colored." These compounds are applicable, amongst other purposes, to "photographic and mirror plate frames," and "to replace wood, ivory, wax, cloth, and other substances used by photographers upon which to adopt photographs."

The colours used in this invention are obtained by baking in a muffle or crucible a suitable metallic oxide mixed with water or a mineral acid. The baked oxide after cooling is reduced to impalpable powder and then dried and sieved.

The preparation of the various compositions is divided "into eight different operations," as follows:

1st. The partial purification of the gutta percha by boiling it in soft water, flattening it, and again boiling it "in a decoction of " *'radix saponaria alba'* or soap wort."

2nd. The complete purification of the gutta percha by boiling it in a caustic lye and flattening it.

3rd. The preparation of "artificial silicate of zinc."

4th. The preparation of "silicate of alumina and of zinc."

5th. The preparation of talc "rose colored by oxide of cobalt."

6th. The preparation of a combination of zinc blends "with " kaolin or with felspar."

7th. The preparation of a combination "of tannin, gutta percha, " chloroform, benzoin, balsam of tolu, or essential oil."

8th. The preparation of a combination of gutta percha with caoutchou, to which camphine or benzoin may be added.

The Drawings show a machine for mixing the above-mentioned compositions, consisting of a vessel heated by a steam jacket and having suitable rollers and scrapers.

[Printed, *ib. id.*]

A.D. 1869, December 28.—N° 2965.

MELLIUSSE, ARTHUR JAMES.—(*Provisional Protection only.*)

"Improvements in cameras," relating to the use of thin sheet metal in the construction of cameras, "so as at the same time to " obtain compactness and lightness with the requisite degree of " strength and stiffness."

The body of the camera and the dark slides are constructed of thin sheet metal properly strengthened by flattened wire or other suitable means. In folding cameras where the joints butt or come together, a strip of metal is soldered to one of the two parts, so as to overlap and cover the joint when in use. "Where the front " and other parts of sheet metal cameras slide together," guiding ribs are used; "and in some cases the sheet metal front of a " camera is hinged to and is caused to fold into the interior of a " camera, and velvet or cloth (by preference black) is applied to " parts where they come or butt together, in order to shut out the " light from the interior of a camera." A recess in the frame of the camera receives the dark slide which is pressed into the re-

cess by means of springs. Lap joints connect the sides of the camera. The body of the camera may be formed of an open frame of metal covered with an opaque material. The frame to receive the dark slide may be made "distinct from the body of the camera, but hinged to the bottom of it, so that it will fold down on to the bottom of the body of the camera to allow of it, the said body, folding down upon it." This frame serves as a support for the body of the camera when it (the frame) is lifted up for use. Spring handles are applied to the shutters of the dark slides, and the edge of the shutter is bent "over the edge of the door when only one shutter is used, thus keeping out the light."

[Printed, 8d.]

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